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PATENTS

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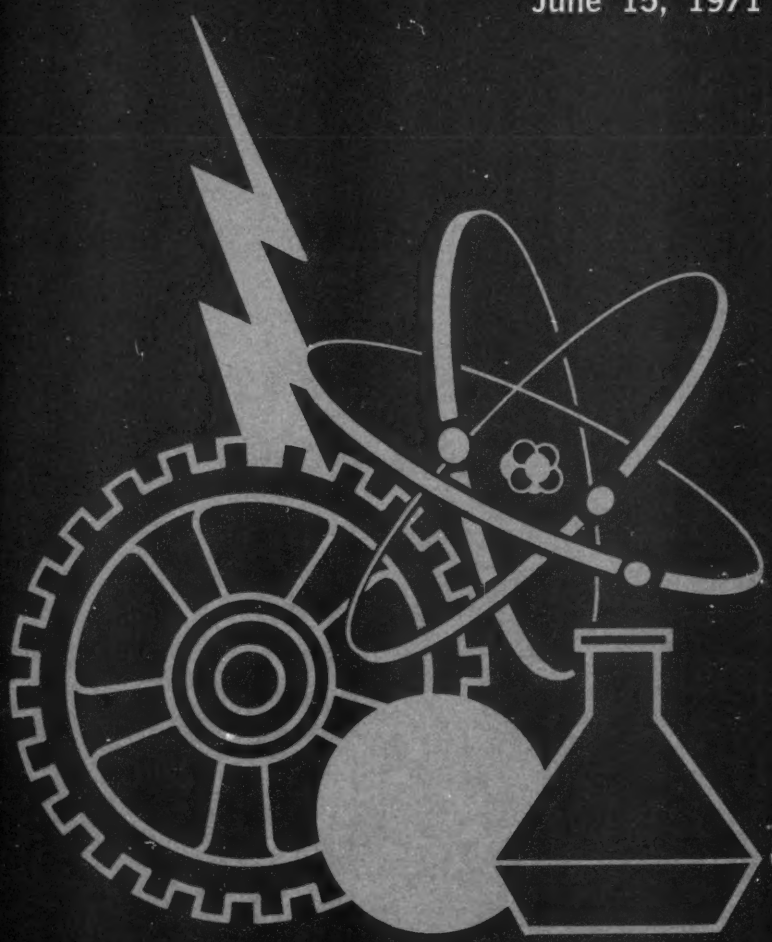

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June 15, 1971 Volume 887 Number 3

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PATENT OFFICE NOTICES

TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

Chapter I—Patent Office, Department of Commerce

PART 1—RULES OF PRACTICE IN PATENT CASES

Discovery During Interference Proceedings

These rule changes are intended to provide for: (1) Consideration of action sought by a party to a patent interference proceeding outside the period prescribed therefor where the delay in seeking such action is justified; (2) the designation of a specific period for discovery and the preparation for the taking of testimony; (3) specified discovery upon request (a) during the period for preparation for testimony as to evidence and testimony to be offered by junior parties and (b) after completion of testimony in chief of the junior parties, as to evidence and testimony to be offered by senior parties; (4) the ordering of additional discovery upon motion by a party where the interest of justice so requires; and (5) sanctions by the Board of Patent Interferences where there is noncompliance with a requirement of a rule or an order by the board.

The proposal to amend Title 37, Code of Federal Regulations, by revising §§ 1.245 and 1.251 and by adding a new § 1.287 was published in the December 31, 1970, issue of the Federal Register (35 F.R. 20011).

All interested persons were given an opportunity to participate in the rule-making process by submission of comments in writing and in person at an oral hearing held on February 19, 1971. The rules are being adopted after full and careful consideration of all the material submitted. The departures from the published text reflect certain of the views expressed in the submitted material.

Effective Date. This amendment shall become effective 30 days after publication in the Federal Register and shall apply only to those interferences in which the times for taking testimony are set on or after such effective date.

In consideration of the comments received and pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), Part 1 of Title 37, Code of Federal Regulations is hereby amended as follows:

1. Section 1.245 is revised to read as follows:

§ 1.245 *Extension of time.*

Extensions of time in any case not otherwise provided for may be had by stipulation of the parties, subject to approval, or on motion duly brought, sufficient cause being shown for such extension. A motion not timely made may be considered upon a showing of sufficient cause as to why such motion was not timely presented.

2. Section 1.251, paragraphs (a), (b), (c), and (d) are revised, and a new paragraph (e) is added as follows:

§ 1.251 *Assignment of times for discovery and taking testimony.*

(a) A period for preparation of testimony will be set in which all parties should complete discovery and other preparatory activities.

(b) Times will be assigned in which the junior party shall complete his testimony in chief, and in which the other party shall complete the testimony on his side, and a further time in which the junior party may take rebutting testimony, but he shall take no other testimony. If there be more than two parties to the interference, the times for taking testimony will be so arranged that each shall have an opportunity to prove his case against prior parties and to rebut their evidence, and also to meet the evidence of junior parties.

(c) Times for preparation of testimony, for compliance with § 1.287(a) and for taking of testimony will ordinarily be assigned in notices sent to the parties after motions under § 1.231 have been disposed of or, if no such motions have been filed, after the close of the motion period (§ 1.231).

(d) Testimony shall be taken during the times assigned in accordance with §§ 1.271 to 1.286.

(e) The date for final hearing will ordinarily be set in separate notices.

3. A new § 1.287 is added as follows:

§ 1.287 *Discovery.*

(a)(1) Each party who expects to take testimony must serve on each opposing party who requests service the following:

(i) A copy of each document in his possession, custody, or control and upon which he intends to rely,

(ii) A list of and a proffer of reasonable access to things in his possession, custody, or control and upon which he intends to rely, and

(iii) A list giving the names and addresses of all persons whom he intends to call as witnesses and indicating the relationship of each person to the invention in issue.

(2) Dates for compliance with subparagraph (1) of this paragraph will be set in accordance with the following:

(i) The date by which all parties may request service shall be not less than 10 days from the date of the order setting testimony times;

(ii) The date for service by all junior parties shall be not less than 30 days from the date of the order setting such times;

(iii) The date for service by the senior party shall be not less than 10 days from the date set for the close of testimony in chief of all junior parties.

(3) Where more than two parties are involved and one of the junior parties is not entitled to take testimony as to a more senior party, the requirements of subparagraphs (1) and (2) of this paragraph shall not be applicable as between such parties.

(b) The provisions of paragraph (a) of this section are without prejudice to the right of a party, where appropriate, to obtain production of documents or things during cross-examination of an opponent's witness or during his own period for rebuttal testimony.

(c) Upon motion (§1.243) brought by a party during the period for preparation of testimony, or thereafter as authorized under § 1.245, and upon a showing that the interest of justice so requires, the Board of Patent Interferences may order additional discovery as to matters under the control of a party within the scope of the discovery rules of the Federal Rules of Civil Procedure, specifying the terms and conditions of such additional discovery. An order by the Board granting or denying a motion under this paragraph shall not be subject to review prior to a decision awarding priority.

(d)(1) A party will not be permitted to rely on any document or thing in his possession, custody, or control, or on any witness, not listed and served by that party as required by paragraph (a) of this section, except upon a promptly filed motion accompanied by the proposed additional documents or lists together with a showing of sufficient cause as to why they were not served by the date set pursuant to paragraph (a) of this section.

(2) Any failure to comply with an order under the provisions of paragraph (c) of this section may be considered by the Board of Patent Interferences as basis for applying appropriate restrictions against the party failing to comply, for holding certain facts to have been established, and in an appropriate case for awarding priority against him, or for taking such other action as may be deemed appropriate.

(e) The parties may by agreement among themselves modify any of the foregoing requirements consistent with the schedule of times for taking testimony and filing the record. In the absence of such agreement, discovery will not be permitted prior to the period set for the preparation of testimony.

Dated: May 6, 1971.

WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

Approved:

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 71-6617 Filed 5-11-71; 8:49 am]

Published in 36 F.R. 8732; May 12, 1971

Office of the Secretary

[Dept. Organization Order 30–3B]

PATENT OFFICE

Organization and Functions

This material supersedes the material appearing at 35 F.R. 18553 of December 5, 1970.

SECTION 1. *Purpose.* This order prescribes the organization and assignment of functions within the Patent Office.

SEC. 2. *Organization Structure.* The principal organization structure and line of authority of the Patent Office shall be as depicted in the attached organization chart. (A copy of the Organization Chart is on file with the original of this document with the Office of the Federal Register.)

SEC. 3. *Office of the Commissioner.* The Commissioner determines the policies and directs the programs of the Patent Office and is responsible for the conduct of all activities of the Patent Office. He is princially assisted by five Assistant Commissioners who shall have the main duties as specified below:

a. The Deputy Commissioner (First Assistant Commissioner under 35 U.S.C. 3) shall assist the Commissioner in the direction of the Patent Office and shall perform the duties and function of the Commissioner in the latter's absence.

b. The Assistant Commissioner for Patent Examining (an assistant commissioner under 35 U.S.C. 3) shall provide administrative and policy direction to the patent examining operations which consist of the organizational elements enumerated in section 5. This Assistant Commissioner shall be assisted by a Deputy Assistant Commissioner who, among other duties, shall perform the functions of this Assistant Commissioner during the latter's absence.

c. The Assistant Commissioner for Appeals, Legislation, and Trademarks (an assistant commissioner under 35 U.S.C. 3) shall provide administrative and policy directions to the Board of Appeals, the Office of Legislation and International Affairs, the Trademark Trial and Appeal Board, and the Trademark Examining Operation.

d. The Assistant Commissioner for Search Systems Development shall provide technical, administrative, and Policy Direction to the Office of Research and Development and the Office of Search Systems and Documentation. This Assistant Commissioner shall be assisted by a Deputy Assistant Commissioner who, among other duties, shall perform the functions of this Assistant Commissioner during the latter's absence.

e. The Assistant Commissioner for Administration shall provide administrative and policy direction to certain administrative, public and internal support services which consist of the organizational elements enumerated in section 8. This Assistant Commissioner shall be assisted by a Deputy Assistant Commissioner who, among other duties, shall perform the functions of this Assistant Commissioner during the latter's absence.

SEC. 4. *Offices reporting to the Commissioner.* .01 The Director of Planning, Budget, Evaluation, and Forecast shall be the principal assistant and advisor to the Commissioner in Planning and Developing the major Programs of the Patent Office, in formulating and executing budgetary and fiscal policies, appraising the effectiveness of operations in attaining program objectives, and in assessing and forecasting technological activities and invention developments in the United States and other nations. He shall direct the activities of the following offices:

a. The Office of Planning shall develop and recommend major plans and programs for accomplishing the objectives of the Patent Office; direct and coordinate the development and maintenance of internal program planning for support of officewide objectives; and analyze proposed programs for consistency and effective integration with organization responsibility, for pertinence to goals and objectives, for measurability of accomplishment, and validity and usefulness of workload parameters as indicators of expected accomplishment.

b. The Office of Budget shall formulate, interpret, and execute budgetary and fiscal policies; establish and maintain a comprehensive Planning-Programming-Budgeting System collaborating with operating officials in developing budget and fiscal plans; develop and present budget requests; allocate and maintain budgetary control of available funds; and maintain external liaison in budgetary matters.

c. The Office of Evaluation shall review and evaluate the performance of operating units to determine their effectiveness in accomplishing previously established goals and objectives; review and evaluate cost/benefit and cost/effectiveness analyses of alternatives for program accomplishment; and conduct or initiate the submission of such studies as needed for evaluation purposes.

d. The Office of Technology Assessment and Forecast shall continually assess the status of technological activity in all countries, compare inventive activity in the United States relative to other nations, and forecast technological developments on a worldwide basis.

.02 The Office of the Solicitor shall comprise the Solicitor, who is the chief legal officer for the Patent Office, and his professional associates. This Office shall handle all litigation to which the Commissioner is a party and provide other legal services, including drafting of legislation and advice and assistance on legislative matters. Other than in connection with the issuance of patents or the registration of trademarks, the Office shall be subject to the overall authority of the Department's General Counsel, as provided in Department Organization Order 10–6.

.03 The Office of Information Services shall advise and represent the Commissioner on information matters; conduct programs fostering public understanding of the American patent system and the functions, services and administrative publications of the Patent Office; develop publication policies; provide direction and assistance in developing new and revised publications; and assure conformity with policies, regulations, and standards concerning publications and publication practices.

.04 The Office of Data Systems shall be responsible for providing data processing services to other elements of the Patent Office. This shall include the conduct of systems analysis and equipment evaluation studies directly related to the design and development of systems and programs for applications of computer techniques, except systems for printing patents; preparation or procurement and testing of computer programs and supplemental data processing services; operation of all general purpose ADP equipment, except that which may be approved for use within another organization unit as an integral part of its operations; and maintenance of a comprehensive library of programs, including those developed or procured by other organizational units.

.05 The Office of Government Inventions and Patents shall administer Executive Order 10096, as amended by Executive Order 10930 and related regulations, including the rendering of final decisions on the ownership of patents and the rights to inventions made by Government employees, and advise the Commissioner on matters involving the Committee on Government Patent Policy (of the Federal Council for Science and Technology). It shall also conduct research, liaison, and coordinative functions needed to carry out Executive Order 10096 and to advise the Commissioner on Committee matters; provide executive secretariat support to the Committee; and assist in the development and formulation, to the extent appropriate, of a uniform Government-wide patent policy.

SEC. 5. *Offices reporting to the Assistant Commissioner for Patent Examining.* 01 The Board of Patent Interferences shall conduct patent interference proceedings and make final determination in the Patent Office as to priority of invention. The Board shall also decide questions concerning property rights in inventions in the atomic energy and space fields brought before it under the provisions of 42 U.S.C. 2182 and 2457 (d) and (e).

.02 The Office of Examining and Documentation Control shall develop procedures, quality and quantity standards relating to the conduct of the examination and documentation functions; evaluate compliance with examination and documentation standards; and train new examiners in patent practice and procedure.

.03 The Office of Support Services shall provide direct administrative and clerical support to the Examining Groups in the examination of patent applications and attend to the processing of applications both in advance of examination and after allowance by the examiners for patent issuance. Its duties include the review of incoming applications for compliance in matters of form; the origination and maintenance of application inventory documentation and status; preparation, routing, movement, and maintenance of files; liaison with other organization units in obtaining and processing documents; and the provision of other logistical and administrative support.

.04 The Examining Groups, specified below, shall examine applications for patent to ascertain if the applicants are entitled to patents under the law and grant patents to those so

entitled. Each examining group shall perform this function for patent applications falling within the generic category indicated by the title of the group. The Examining Groups are:

General Chemistry and Petroleum Chemistry;
General Organic Chemistry;
High Polymer Chemistry, Plastics and Molding;
Coating and Laminating, Bleaching, Dyeing and Photography;
Specialized Chemical Industries and Chemical Engineering;
Industrial Electronics and Related Elements;
Security and Designs;
Information Transmission, Storage and Retrieval;
Electronic Component Systems and Devices;
Physics;
Handling and Transportation Media;
Material Shaping, Article Manufacturing, Tools;
Amusement, Husbandry, Personal Treatment, Information;
Heat Power and Fluid Engineering; and
Constructions, Supports, Textiles, and Cleaning.

SEC. 6. *Offices reporting to the Assistant Commissioner for Appeals, Legislation and Trademarks.* .01 The Board of Appeals shall conduct hearings and render decisions on appeals from adverse decisions of examiners rejecting claims in patent applications.

.02 The Office of Legislation and International Affairs shall make studies and advise the Commissioner on policy and action concerning matters which may require legislation and on international patent and trademark matters; develop and direct the implementation of related programs; maintain liaison with the Office of the Secretary, the Department of State, and appropriate congressional committees; and conduct negotations in technical patent and trademark matters in establishing or implementing international agreements.

.03 The Trademark Trial and Appeal Board shall be responsible for hearing and deciding adversary proceedings involving interfering applications, oppositions to registration, cancellation petitions, and concurrent use proceedings; and for hearing and deciding appeals from final refusals of the trademark examiners to allow the registration of trademarks.

.04 The Trademark Examining Operation shall be responsible for the classification and examination of applications for the registration of trademarks and service marks and the maintenance of the principal and supplemental registers of trademarks.

SEC. 7. *Offices reporting to the Assistant Commissioner for Search Systems Development.* .01 The Office of Research and Development shall identify areas of needed research, formulate approaches to research problems, and conduct research (or monitor research carried out under contract); and design and install experimental systems, new equipment, or other products of research, and evaluate their effectiveness after installation. Major research and development efforts are aimed at development of automated search and retrieval systems and more effective dissemination of stored information to Patent Office examiners, the patent profession, and the scientific community.

.02 The Office of Search Systems and Documentation shall develop, improve, and maintain subject matter classification systems; improve and maintain the examiner's search file; develop, improve, and maintain operational search systems both manual and electronic, for the storage and identification of patents and patent related literature so that examiners and the public may readily retrieve particular technical information.

SEC. 8. *Offices reporting to the Assistant Commissioner for Administration.* .01 The Office of Finance shall develop and maintain the financial accounting system of the Patent Office; perform accounting operations for the revenue, trust funds, and appropriation of the Patent Office, including maintenance of general accounts and related fiscal records, preparation of financial statements and reports, audit and certification of vouchers for payment, issuance of deposit account statements, initiation of action to collect amounts due the Patent Office, and administration of the payroll system and related employee accounts; and provide financial advice and opinions.

.02 The Office of Personnel shall administer activities relating to recruitment, placement, employee relations, training and career development, incentive awards, performance rating, position classification and wage administration, group-management relations and various employee benefit programs.

.03 The Office of Administrative Services shall provide office-wide services including the procurement and supply of equipment, furnishings, and consumable items; space and facilities management; communications; travel and transportation services; mail, messenger, and general correspondence services; and procurement and supply of graphic services and administrative printing, including office forms and publications. This Office shall also be responsible for carrying out a comprehensive paperwork management program in the Patent Office, embracing forms, reports, directives and records.

.04 The Office of Public Services shall provide the materials and services offered directly to the public many of which are provided on a fee basis. These shall include recording instruments that transfer property rights to patents and trademarks; furnishing copies of patents and office records; providing drafting services; and maintaining collections of pertinent technical and scientific information such as United States and foreign patents, periodicals, books, and other publications for use by patent and trademark examiners and the public.

.05 The Office of Patent Publications shall schedule and manage the processing and movement of allowed patent application files in procuring the creation of full patent text machine language data base and the composition and printing of weekly patent issues and related announcements in the Official Gazette; monitor the quality of performance by contributing sources; provide technical direction and advice in contract administration; and maintain close liaison with the U.S. Government Printing Office; and prepare and issue patent grants.

.06 The Office of Organization and Systems Analysis shall plan and conduct studies designed to improve organization, methods, procedures, workflow, managerial techniques, resource utilization, or otherwise increase efficiency, effectiveness and economy of operations; participate in implementing approved recommendations; counsel and assist program managers in developing and instituting systems changes to enhance effectiveness in meeting operational objectives, but not including computer systems; having responsibility for design and development of systems for printing patents, whether computerized or not, including reproduction subsystems; have responsibility for design and development of micrographic systems; provide data research and statistical analytical services, including mathematical modeling; develop and manage a system for the issuance of internal administrative orders and instructions; promote development of the Patent Office management improvement program and coordinate the collection, review, and submission of reportable plans and accomplishments thereon; maintain a program for the management and control of reports; and make special studies as required.

Effective date: May 4, 1971.

LARRY A. JOBE,
Assistant Secretary for Administration.

[FR Doc. 71-6957 Filed 5-18-71; 8:45 am]

Published in 36 F.R. 9078, May 19, 1971

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

(D.C. Tex.) Schroeder Patent No. 201,224 (D58—26), for COMBINED CONTAINER AND CARRIER FOR BEVERAGE CANS OR THE LIKE, *Held* invalid. *Design, Inc.* v. *Emerson Co.*, 319 F. Supp. 8, 168 USPQ 519.

(D.C. Calif.) Amori Patent No. Re. 26,111 (146—224), for FRUIT ORIENTING AND CUTTING SYSTEM, *Held* invalid. *Amori* v. *Mattos*, 319 F. Supp. 141, 167 USPQ 67.

(D.C. Calif.) Amori Patent No. Re. 26,117 (146—73), for FRUIT ORIENTING AND CUTTING SYSTEM, *Held* invalid. *Id.*

(C.A. Pa.) Jesnig Patent No. 2,620,938 (215—38), for CONTAINER CLOSURE. Claim 2 *Held* invalid. *Package Devices, Inc.* v. *Sun Ray Drug Co.*, 432 F.2d 272, 167 USPQ 193.

(D.C. Ill.) Rhine Patent No. 2,628,568 (103—135), for HIGH PRESSURE PUMP, *Held* claims 1 and 3 valid and infringed. *Ellipse Corp.* v. *Ford Motor Co.*, 312 F. Supp. 646, 164 USPQ 161.

(D.C.N.C.) Budzyna et al. Patent No. 2,673,575 (139—89), for HARNESS MECHANISM. Claims 1, 2, 4 and 5 *Held* not infringed. *Marshall* v. *Baxter Textile Machines, Inc. et al.*, 318 F. Supp. 324, 166 USPQ 535.

(D.C. Calif.) Levi et al. Patent No. 2,700,000 (117—33.26), for THERMIONIC CATHODE AND METHOD OF

MANUFACTURING SAME. Claims 1 to 7 and 9 to 14 *Held* valid and infringed. *North American Philips Co.* v. *Stewart Engineering Co.*, 319 F. Supp. 335, 166 USPQ 477.

(D.C. Calif.) Hughes et al. Patent No. 2,700,118 (313—346), for INCANDESCIBLE CATHODE. Claims 1 to 4 *Held* valid and infringed. *North American Philips Co.* v. *Stewart Engineering Co.*, 319 F. Supp. 335, 166 USPQ 477.

(D.C. Calif.) Amori Patent No. 2,713,934 (198—33), for FRUIT PITTING MACHINE, *Held* invalid. *Amori* v. *Mattos*, 319 F. Supp. 141, 167 USPQ 67.

(U.S. Ct. Cl.) Risley et al. Patent No. 2,738,995 (285—196), for PIPE COUPLING WITH MULTIPART CLAMP. Claims 1, 2, and 6 *Held* not infringed. *Dresser Industries, Inc.* v. *United States*, 432 F.2d 787, 167 USPQ 473.

(D.C. OHIO) Te Grotenhuis Patent No. 2,742,378 (117—76), for FILLERS HAVING VINYL SILOXANE GROUPS BONDED TO THE SURFACE THEREOF AND COPOLYMERS THEREOF WITH ETHYLENICALLY UNSATURATED POLYMERIZABLE MONOMERS. Claims 1, 3, 4, 6 to 8, 11, 14, 15, 19, 21, 23 to 26 and 28 *Held* invalid and not infringed. *Westwood Chemical, Inc.* v. *Owens-Corning Fiberglas Corp.*, 317 F. Supp. 201, 168 USPQ 79.

(D.C. Ill.) Klopfenstein Patent No. 2,776,510 (41—1), for MACHINE FOR APPLYING FILMS TO BASE SHEETS. Claims 1 and 3 to 6 *Held* valid but not infringed. *Erie Technological Products, Inc.* v. *Die Craft Metal Products, Inc.*, 318 F. Supp. 933, 166 USPQ 172.

(C.A. Wis.) Schutte et al. Patent No. 2,834,809 (92—3), for ABSORBENT PAPER, *Held* invalid. *Scott Paper Co.* v. *Fort Howard Paper Co.*, 432 F.2d 1198, 167 USPQ 4.

(D.C. Ohio) Te Grotenhuis Patent No. 2,841,566 (260—17.4), for HIGH POLYMERS WITH CHEMICALLY BONDED REINFORCING AND METHOD OF MAKING SAME. Claim 8 *Held* invalid and not infringed. *Westwood Chemical, Inc.* v. *Owens-Corning Fiberglas Corp.*, 317 F. Supp. 201, 168 USPQ 79.

(C.A. Calif.) Bau Patent No. 2,902,041 (132—79), for COSMETIC MAKE-UP KIT. Claims 3, 4 and 5 *Held* invalid. *Helena Rubenstein, Inc.* v. *Bau*, 433 F. Supp. 1021, 167 USPQ 711.

(D.C.N.Y.) Giaimo, Jr. Patent No. 2,922,883 (250—49.5), for ELECTROSTATIC CHARGING MEANS AND METHOD, *Held* invalid. *SCM Corporation* v. *Radio Corp. of America*, 318 F. Supp. 433, 167 USPQ 197.

(D.C. Ill.) Schaefer Patent No. 2,967,623 (211—45), for DISPLAY HANGER, *Held* not infringed. *Central Specialties Co.* v. *Schaefer*, 318 F. Supp. 855, 167 USPQ 15.

(C.A. Calif.) Ashcroft Patent No. 3,018,761 (120—42.1), for BALL-POINT PEN WITH TANDEM CARTRIDGES. Claims 1 to 6 *Held* invalid. *Ashcroft* v. *Paper Mate Manufacturing Co.*, 434 F.2d 910, 168 USPQ 66.

(C.A. Calif.) Gerard Patent No. 3,028,576 (156—251), for METHODS AND APPARATUS FOR MAKING THIN PLASTIC GLOVES, *Held* invalid. *Ethicon, Inc.* v. *Handgards, Inc.*, 432 F.2d 438, 167 USPQ 16.

(D.C.N.Y.) Greig Patent No. 3,052,539 (96—1), for ELECTROSTATIC PRINTING. Claims 1 to 22 *Held* invalid. *SCM Corporation* v. *Radio Corporation of America*, 318 F. Supp. 433, 167 USPQ 196.

(D.C.N.Y.) Greig Patent No. 3,052,540 (96—1), for DYE SENSITIZATION OF ELECTROPHOTOGRAPHIC MATERIALS, *Held* invalid. *Id.*

(D.C. Del.) Jones Patent No. 3,061,271 (254—144), for RIGGING STRUCTURE FOR ERECTING STORAGE ENCLOSURES, *Held* not infringed. *Jones* v. *O. A. Newton & Sons Co.*, 317 F. Supp. 705, 167 USPQ 152.

(D.C. Tex.) Kantrowitz, now by change of name Kay Patent No. 3,086,297 (35—35), for TALKING BOOK. Claims 1 to 3 and 9 *Held* valid and not infringed. *Marvin Glass and Associates* v. *Sears, Roebuck and Company*, 318 F. Supp. 1089, 167 USPQ 33.

(D.C.N.C.) Hassler Patent No. 3,105,713 (294—5.5), for APPARATUS FOR BULK CURING TOBACCO, *Held* invalid. *Powell Manufacturing Co.* v. *Long Manufacturing Co.*, 319 F. Supp. 24, 168 USPQ 24.

(D.C.N.C.) Hassler Patent No. 3,110,326 (131—140), for METHOD FOR BULK CURING TOBACCO. *Held* invalid. *Id.*

(D.C. Mich.) Marsh Patent No. 3,161,223 (153—16), for SHEET METAL BRAKE, *Held* invalid. *Tapco Products Company* v. *Van Mark Products Corporation et al.*, 318 F. Supp. 79, 166 USPQ 530.

(C.A. Ohio) Crone Patent No. 3,179,026 (94—18), for SEALING ELEMENT FOR PAVEMENT GROOVES, *Held* valid. *Acme Highway Products Corporation* v. *The D. S. Brown Company et al.*, 431 F.2d 1074, 167 USPQ 129.

(D.C. Calif.) Levi Patent No. 3,201,639 (313—346), for THERMIONIC DISPENSER CATHODE. Claims 1, 2, 5 to 14, 16 and 17 *Held* valid and infringed. *North American Philips Company* v. *Stewart*, 319 F. Supp. 335, 166 USPQ 477.

(D.C. Mass.) Tichnor Patent No. 3,259,304 (229—92.8), for POSTCARDS, *Held* invalid. *Colourpicture Publishers, Inc.* v. *Mike Roberts Color Productions, Inc.*, 317 F. Supp. 508, 168 USPQ 343.

(C.A. Tenn.) Bundy Patent No. 3,273,706 (206—62), for GLASS PALLET PACKAGE, *Held* infringed. *American Saint Gobain Corp.* v. *Armstrong Glass Co., Inc.*, 434 F.2d 1216, 168 USPQ 129.

(D.C. Md.) Miller et al. Patent No. 3,356,226 (210—457), for INTEGRALLY WOUND FILTER TUBE, *Held* not infringed. *Filterite Corporation* v. *Tate Engineering, Inc.*, 318 F. Supp. 584, 167 USPQ 450.

(D.C. Ill.) Schaefer Patent No. 3,463,324 (211—123), for DISPLAY HANGER WITH CROSSBAR AND REMOVABLE SUPPORT ASSEMBLY, *Held* not infringed. *Central Specialties Company* v. *Schaefer*, 318 F. Supp. 855, 165 USPQ 15.

Certificates of Correction for the Week of June 15, 1971

D. 219,862	3,539,551	3,553,076	3,561,833
3,402,524	3,539,553	3,553,407	3,562,186
3,422,329	3,539,599	3,554,266	3,562,242
3,438,918	3,540,396	3,554,476	3,562,244
3,468,811	3,541,061	3,554,495	3,562,315
3,477,956	3,541,462	3,555,523	3,562,452
3,483,296	3,542,234	3,556,853	3,562,673
3,490,723	3,542,788	3,556,932	3,562,866
3,496,424	3,542,905	3,556,959	3,563,097
3,502,594	3,542,993	3,556,987	3,563,231
3,503,064	3,544,205	3,557,169	3,563,540
3,509,900	3,544,212	3,557,189	3,564,053
3,511,834	3,544,558	3,557,231	3,564,061
3,513,112	3,546,918	3,557,236	3,564,834
3,516,376	3,547,032	3,557,285	3,564,856
3,519,419	3,547,666	3,557,438	3,565,873
3,522,890	3,548,047	3,557,696	3,565,911
3,524,030	3,549,049	3,558,022	3,565,958
3,524,114	3,549,103	3,558,446	3,566,408
3,528,000	3,549,315	3,558,490	3,566,559
3,528,995	3,549,605	3,558,662	3,567,196
3,531,249	3,549,618	3,558,664	3,567,435
3,533,130	3,549,631	3,558,686	3,567,459
3,533,705	3,549,708	3,599,893	3,567,605
3,534,143	3,550,924	3,559,952	3,567,684
3,535,640	3,551,370	3,559,993	3,567,696
3,537,784	3,551,878	3,560,011	3,568,658
3,537,862	3,551,996	3,560,042	3,569,658
3,538,496	3,552,171	3,560,403	3,569,724
3,538,827	3,552,421	3,560,854	
3,539,290	3,552,858	3,561,054	
3,539,534	3,553,050	3,561,832	

Dedications

3,302,394.—*Alden John Pahnke,* Wilmington, and *Donald Maurice Sowards,* Claymont, Del. EXHAUST MANIFOLD REACTOR. Patent dated Feb. 7, 1967. Dedication filed Mar. 24, 1971, by the assignee, *E. I. du Pont de Nemours and Company.*

Hereby dedicates the entire term of said patent to the Public.

3,413,803.—*Iver Theodore Rosenlund,* Chester County, Pa., and *Walter Harold Douthit,* New Castle County, Del. EXHAUST MANIFOLD REACTION SYSTEM AND APPARATUS. Patent dated Dec. 3, 1968. Dedication filed Mar. 24, 1971, by the assignee, *E. I. du Pont de Nemours and Company.*

Hereby dedicates the entire term of said patent to the Public.

3,462,091.—*Richard N. Adrien,* Somersworth, N.H., and *Lee E. Duggan,* Arlington, Mass. CROSS WOUND COIL WINDING MACHINE. Patent dated Aug. 19, 1969. Dedication filed Mar. 4, 1971, by the assignee, *General Electric Company.*

Hereby dedicates the entire term of said patent to the Public.

Disclaimers

2,825,698.—*William C. Taylor,* and *Lu Ho Tung,* Midland, Mich. METHOD FOR THE PREPARATION OF DENSITY GRADIENTS. Patent dated Mar. 4, 1958. Disclaimer filed Apr. 8, 1971, by the assignee, *The Dow Chemical Company.*

Hereby enters this disclaimer to claims 1–11, inclusive, of said patent.

2,954,052.—*Robert D. Krehbiel,* Hutchinson, Kans. PRESSURE FLUID CONTROL SYSTEM AND VALVE. Patent dated Sept. 27, 1960. Disclaimer filed Mar. 19, 1971, by the assignee, *Cessna Aircraft Company.*

Hereby enters this disclaimer to claims 1, 2, 3, 4 and 5 of said patent.

3,376,862.—*Fred Riehl,* Greensburg, Pa. DOUBLE BURNER FUEL CONTROL SYSTEM. Patent dated Apr. 9, 1968. Disclaimer filed Sept. 21, 1970, by the inventor and the assignee, *Robertshaw Controls Company.*

Hereby enter this disclaimer to claims 1 and 2 of said patent.

3,422,050.—*Robert R. Brown,* and *George F. Schmidt,* Dover, Del. COPOLYMERS OF CONJUGATED DIOLEFINS AND PARTIAL ESTERS OF UNSATURATED POLYBASIC ACIDS. Patent dated Jan. 14, 1969. Disclaimer filed Mar. 31, 1971, by the assignee, *Standard Brands Chemical Industries, Inc.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

3,482,170.—*Constantine S. Ananiades,* Pasadena, and *Kenneth D. Krossa,* Sierra Madre, Calif. PULSE DISCRIMINATION CIRCUIT. Patent dated Dec. 2, 1969. Disclaimer filed Feb. 18, 1971, by the assignee, *Burroughs Corporation.*

Hereby disclaims all of the claims in said patent.

3,509,181.—*Frank Aloysius Vincent Sullivan,* Westfield, and *Tamara Dejneka,* Skillman, N.J. FURFURYL AND TETRAHYDROFURFURYL DERIVATIVES AS ANTIOZONANTS FOR RUBBER. Patent dated Apr. 28, 1970. Disclaimer filed Mar. 15, 1971, by the assignee, *American Cyanamid Company.*

Hereby enters this disclaimer to claims 1, 4 and 5 of said patent.

3,538,053.—*Alan Rembaum,* Altadena, and *Stanley Singer,* Pasadena, Calif. NUCLEAR ALKYLATED PYRIDINE ALDEHYDE POLYMERS AND CONDUCTIVE COMPOSITIONS THEREOF. Patent dated Nov. 3, 1970. Disclaimer filed Mar. 10, 1971, by the assignee, *California Institute of Technology.*

Hereby enters this disclaimer to claims 1 to 4 of said patent.

3,541,945.—*Monroe L. Wexler,* Philadelphia, Pa. HOODED EXHAUST VENT. Patent dated Nov. 24, 1970. Disclaimer filed Mar. 15, 1971, by the assignee, *Acme Manufacturing Company.*

Hereby enters this disclaimer to claim 1 of said patent.

3,552,167.—*Benjamin F. Bregi,* Grosse Point Shores, *Arthur B. Bassoff,* Oak Park, and *Russell W. Anthony,* Harper Woods, Mich. GEAR ROLLING EQUIPMENT. Patent dated Jan. 5, 1971. Disclaimer filed Feb. 3, 1971, by the assignee, *Lear Siegler, Inc.*

Hereby enters this disclaimer to claims 1, 2, 10 and 11 of said patent.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JUNE 1, 1971

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-02-70
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-01-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	2-17-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	3-30-70
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-05-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	9-21-70
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	1-19-70
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-01-70
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	1-27-70
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	2-17-70
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	6-17-70
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	4-03-70
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	2-02-70
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	2-24-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—C. F. GAREAU, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	6-25-70
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	2-02-70

Expiration of patents: The patents within the range of numbers indicated below expire during June 1971, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

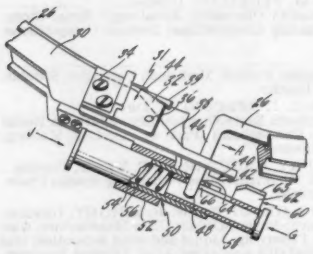
Patents..... **Numbers 2,679,645 to 2,682,657, inclusive**
Plant Patents..... **Numbers 1,282 to 1,287, inclusive**

PATENTS

GRANTED JUNE 15, 1971

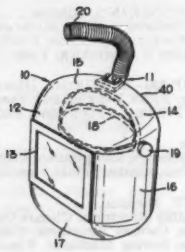
GENERAL AND MECHANICAL

3,584,313
HELMET LATCHING AND UNLATCHING MECHANISM
Norman E. Brown, Hadley, Mass., and Ewald Kothe, East Hartland, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Dec. 20, 1968, Ser. No. 785,605
Int. Cl. A62b *17/00*
U.S. Cl. 2—2.1 **2 Claims**



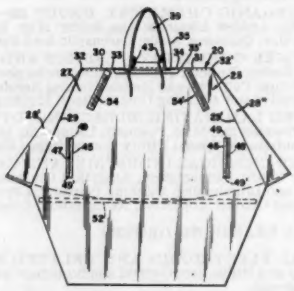
A neck-ring for use with a helmet of the pressurizable type, the neck-ring including an expandable latching ring having a depending member engageably connected to latching and unlatching means, movement of the latching ring being transmitted thereto. Attached to the neck-ring is resilient means for locking the depending member in place and thereafter requiring two contrary movements to unlock the mechanism.

3,584,314
VENTILATED WELDING HELMET
Willis S. Hobson, Seymour, Ind., assignor to Seymour Manufacturing Co., Seymour, Ind.
Filed Mar. 18, 1968, Ser. No. 713,599
Int. Cl. A61f *9/06*
U.S. Cl. 2—8 **6 Claims**



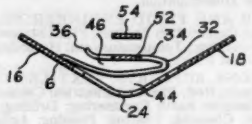
The ventilated welding helmet includes a face shield provided with a window and a curved hood. The face shield is pivotally attached to a head frame worn by the operator. The ventilating means includes a centrifugal blower supplying filtered air through a flexible hose having one end connected to the blower. At its other end, the flexible hose includes a nozzle having a divergent spout and a projecting lug. A pair of clamping screws threadedly attached to the lug provides a means of detachably connecting the helmet between the spout and lug whereby to direct air inwardly of the shield.

3,584,315
DUAL TARP APPARATUS
Roger J. Hardy, 231 Riverside Park Road, Bismark, N. Dak. 58501
Filed May 21, 1969, Ser. No. 826,365
Int. Cl. A41d *15/04*
U.S. Cl. 2—89 **1 Claim**



The invention comprises a dual purpose tarp, having a front and rear panel connected together and a pair of vertical zippered openings for a wearer to place his arms through and a horizontal zippered opening for the wearer to place his head through with a hood mounted about the horizontal zippered opening for covering the head of the wearer. The tarp is convertable and of a size or shape so that when the zippers are closed the tarp will effectively cover a motorcycle.

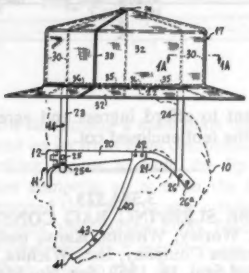
3,584,316
NECKTIE KNOT FORMING AND SUPPORTING DEVICE
Aubrey L. Gouner, Metairie, La., assignor to Wembley Industries, Inc., New Orleans, La.
Filed Apr. 20, 1970, Ser. No. 30,181
Int. Cl. A41d *25/08*
U.S. Cl. 2—153 **2 Claims**



A unitary knot forming and supporting device for four-in-hand neckties on which the knot of a wide-type necktie may be tied, after which the device with the knot thereon is attached to the collar of the wearer's shirt. The device has wings extending upwardly and outwardly from a body part for insertion between the collar band and the collar, and also has two walls positioned rearwardly of the body part and defining two spaces. The knot

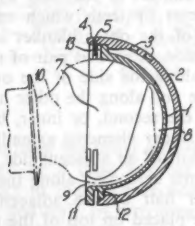
is formed by draping parts of the necktie about the body part, wings and walls and within the spaces bounded by the walls, by a procedure described in the specification.

3,584,317
VENTILATED HAT
Raphael Porcello, P.O. Box 286, Knickerbocker Station, New York, N.Y. 10002
Filed Feb. 17, 1970, Ser. No. 11,960
Int. Cl. A42c *5/04*
U.S. Cl. 2—182.6 **7 Claims**



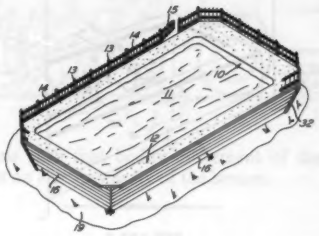
A two-piece ventilated hat consisting of an optical frame provided with means on each of the collapsible temple bars thereof for detachably supporting a collapsible head cover. The supporting means includes a pair of rigid inverted U-shaped members which bridge the intermediate portions of the temple bars and thereby afford an increased rigidity with a minimum obstruction to the air circulation.

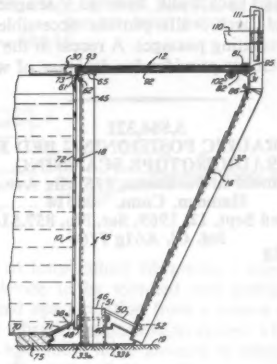
3,584,318
ARTIFICIAL JOINTS FOR USE IN SURGERY
John Tracey Scales, Stanmore, and Ian Duff-Barclay, Wargrave, England, assignors to National Research Development Corporation, London, England
Filed Jan. 13, 1966, Ser. No. 520,525
Claims priority, application Great Britain, Jan. 14, 1965, 1,739/65
Int. Cl. A61f *1/24, 5/01*
U.S. Cl. 3—1 **6 Claims**



A prosthesis used as an artificial joint in the human bone structure comprises a bearing member adapted to be held in a fixed position by a cup-shaped seating member which is anchored to the bone structure. The concave, spherical bearing surface of the bearing member has a relieved portion for receiving particles of attrition from the joint members formed during use of the joint and an opening for releasing the particles from the joint. A femoral member with a generally spherical shaped head having a flat area to insure better wearing of the joint is mounted within the bearing member.

3,584,319
PORTABLE SWIMMING POOL STRUCTURE
William A. van den Broek, Doylestown, Pa., assignor to Sylvan Pools, Inc., Doylestown, Pa.
Filed May 23, 1968, Ser. No. 731,573
Int. Cl. E04h *3/16*
U.S. Cl. 4—172.19 **7 Claims**



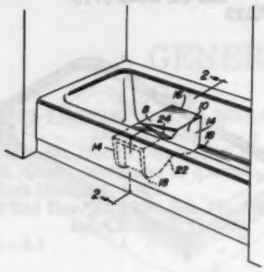


An above-ground portable swimming pool structure, which can be readily assembled and disassembled, is disclosed. This structure, preferably of all metal construction, features a system of continuous trussing which makes the structure rigid and resists the bowing effect of hydraulic pressures. Elements of the truss include interlocked vertical sections, which define the walls of a cavity in which a water-impermeable liner is received, interlocked horizontal sections, which constitute a perimetrical decking about the top of the cavity, and various braces and connecting beams. The total weight of the structure is carried on a ground bearing beam which anchors the truss and generally defines the perimeter of the cavity. The vertical wall sections and horizontal decking sections are preferably identical in cross-section and the particular cross-sections utilized for these and others of the members result in economies. A fence may be provided about the perimeter of the deck. A special clip which cooperates with the panels of decking and wall sections is also disclosed.

3,584,320
BATHTUB SEAT
Irva Locke, 573 Wood Ave., Tice, Fla. 33905
Filed Nov. 17, 1969, Ser. No. 877,230
Int. Cl. A47k *3/12*
U.S. Cl. 4—185.5 **8 Claims**

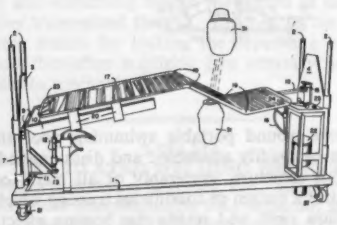
A stool adapted to be removably but conformingly lodged in a bathtub and which is convenient as well as comfortable for use by handicapped, ill and aged users

when taking a shower or a tub bath. It resembles a miniature box-like bench. It embodies a horizontal seat member marginally bordered by longitudinal depending front and back walls and transverse end walls between end portions



of the front and back walls. Inverted V-shaped notches in the front and back walls provide accessible handgrips and water circulating passages. A recess in the top surface of the seat member provides for drainage of water.

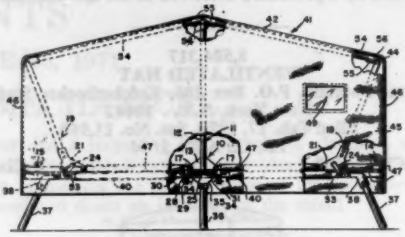
3,584,321
HYDRAULIC POSITIONING BED FOR RADIOISOTOPE SCANNING
Donald L. Buchanan, 975 Mix Ave., Hamden, Conn. 06514
Filed Sept. 12, 1969, Ser. No. 857,514
Int. Cl. A61g *7/06*
U.S. Cl. 5—68 **6 Claims**



A positioning bed for use in radioisotopic scanning which is capable of vertical, horizontal, and angular adjustment and is comprised of three hingedly connected sections so that a variety of configurations may be assumed. The patient is supported on the bed by a material transparent to nuclear radiation so that there are no impediments to radiation scanning either above or below or lateral to the patient.

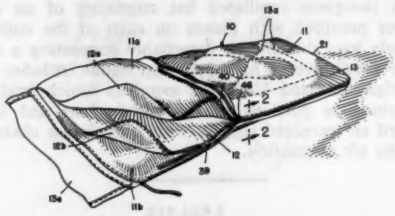
3,584,322
COT SUPPORTED TENT SUPPORTING FRAME
Roland A. McDougall, 704 Hall St., Charleston, W. Va. 25302
Filed Aug. 12, 1969, Ser. No. 849,352
Int. Cl. A47c *29/00*
U.S. Cl. 5—113 **9 Claims**

A tubular metal tent frame capable of being readily attached to and supported by the tubular metal frame of a conventional cot for supporting a tent or canopy over the cot for protecting the occupant from the elements and from insects while sleeping outdoors. The tent frame is formed of pivotally connected sections to enable it to be compactly folded for storage or transportation with the tent, when detached from the cot, or for opening one



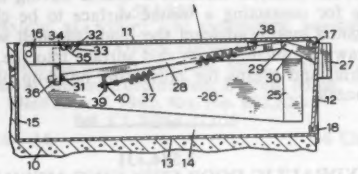
end of the tent to afford ingress and egress to or from, respectively, the tent enclosed cot.

3,584,323
MULTI-USE SLEEPING BAG CONSTRUCTION
Lauren D. Worley, Wichita, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.
Filed Sept. 10, 1969, Ser. No. 856,625
Int. Cl. A47g *13/09*
U.S. Cl. 5—343 **4 Claims**



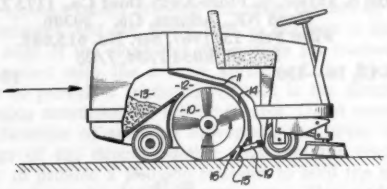
A sleeping bag construction which may be used to provide either a single sleeping bag in which the number of warmth-providing layers can be varied, a double sleeping bag for use by two persons, or two separate single sleeping bags. The sleeping bag includes a pair of generally rectangular blankets of approximately the same size. A first, or outer, blanket is provided with a pair of rows of zipper elements or teeth which extend continuously along one side of the outer blanket and along one-half of an adjacent side. A second pair of rows of zipper elements extends along the side of the outer blanket opposite the first side and along the other half of the adjacent side. Similarly, the second, or inner, blanket is provided with a row of zipper elements extending along one side and along one-half of an adjacent side, and a second row of zipper elements extending along the opposite side and along the other half of the adjacent side. The inner blanket may be placed on top of the outer blanket, and both blankets may be folded upon themselves to form four blanket layers. Each zipper row on the inner blanket is engageable with one of the inner zipper rows on the outer blanket, and the two outer zipper rows of the outer blanket can be joined to provide a single sleeping bag in which either one, two, or three layers may be used to warm the person sleeping in the bag. If the outer zipper rows are unfastened, the two blankets can be unfolded to provide a double sleeping bag in which the inner blanket covers the two sleepers. Finally, the inner blanket may be unfastened from the outer blanket, and two sleeping bags may be provided by joining the two outer zipper rows of the outer blanket and the two rows of the inner blanket.

3,584,324
DOCKBOARD
John A. Merrick, 40 Oak Ave., Dundas, Ontario, Canada
Filed Dec. 16, 1968, Ser. No. 783,810
Int. Cl. B65g *11/00*
U.S. Cl. 14—71 9 Claims



In a dockboard comprising a main plate with a lip plate pivotally mounted on its front edge combined lip elevating means and latching means to hold the lip plate in its extended position comprise an arm on the lip plate and a latch arm connected thereto in toggle configuration with spring means urging the linkage away from its neutral position; the co-operating latch members are on the main plate and the latch arm so that the lip elevating spring also ensures engagement and disengagement of the latch; the rear end of the latch arm moves freely vertically, the spring being connected to give an accelerated snap action through the toggle neutral position; one of the latch members is a cam and permits the latch to release if an excessive force is applied to the lip, for example by a transport backing into the lip or the dockboard moving downwards with an excessive force.

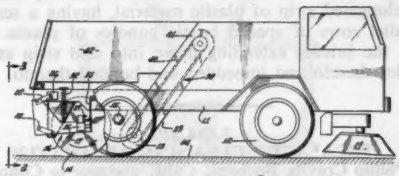
3,584,325
ROAD SWEEPER BROOM CHAMBER CONTROL
Gregory J. Larsen and Rodney L. Woodworth, Claremont, Calif., assignors to Wayne Manufacturing Company, Pomona, Calif.
Filed Nov. 13, 1969, Ser. No. 876,439
Int. Cl. E01h *1/04*
U.S. Cl. 15—83 6 Claims



The invention replaces the usual air seal flap attached to the forward wall of a road sweeper pickup broom chamber and subject to lodged deflection and retention between the broom and wall, by providing a different flap pivotally mounted for bodily rotation between reversible positions in which a lower extent of the flap rides the road surface and an upper extent bears against the inside of the broom housing in a position from which the flap has deflected escape during the flap reversal.

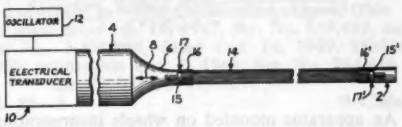
3,584,326
ROAD SWEEPER BROOM SUSPENSION
Rodney L. Woodworth, Claremont, Calif., assignor to Wayne Manufacturing Company, Pomona, Calif.
Filed Nov. 14, 1969, Ser. No. 876,630
Int. Cl. E01h *1/04*
U.S. Cl. 15—84 8 Claims

A road sweeper pickup broom is mounted for bodily swinging movement by a suspension positioned rearwardly of the sweeper vehicle rear wheels and comprising a pair of broom carrying arms having link connections with the



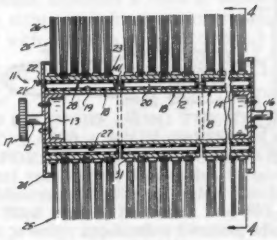
vehicle frame such that bodily movement of the broom occurs about an axis forwardly of the broom.

3,584,327
ULTRASONIC TRANSMISSION SYSTEM
Edward J. Murry, Palos Park, Ill., assignor to Fibra-Sonics, Inc., Chicago, Ill.
Filed Apr. 4, 1969, Ser. No. 813,679
Int. Cl. B08b *9/00*
U.S. Cl. 15—104.16 23 Claims



A source of longitudinal vibrations is transmitted to a utilization device to be vibrated and positioned in substantial spaced apart relation from a source of vibrations by a unique vibration transmission system which can concentrate an extremely large amount of energy in a very small space. The transmission system comprises a flexible bundle of as many as 100 or more fine wires connected at one end to the source of vibration and at the other end to the utilization device so longitudinal waves are propagated separately along each of the wires. The wires are surrounded most advantageously by an air medium. The acoustic impeda . . of the material out of which the wires are made is most advantageously selected at least roughly to match that of the utilization device.

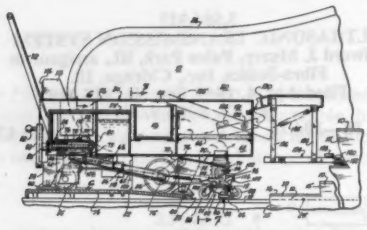
3,584,328
STREETSWEEPER BRUSH
Leo Lechene, Patton, and John Campbell, Coalport, Pa., assignors to Fab-Fibre Company, Patton, Pa.
Filed Dec. 2, 1969, Ser. No. 881,531
Int. Cl. A46b *1/00, 7/02*
U.S. Cl. 15—179 12 Claims



In a streetsweeper brush, having a power rotated core, one or more elongated hollow tubular inflatable flexible mandrels mounted on and along said core, and one or

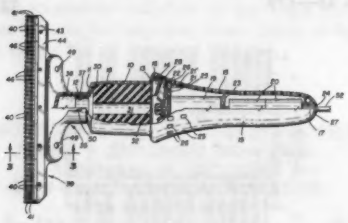
more bristle mat assemblies of sleeve form mounted on said mandrels, pressurizing and expansion of said mandrels affixing said mandrels to the core and to said bristle mat assemblies, the bristle mat assembly including an elongated strip of plastic material, having a series of parallel rows of spaced bristle bundles of plastic material, the bristles extending down into said strip at right angles thereto and imbedded and bonded thereto.

3,584,329
ESCALATOR CLEANING APPARATUS
Phillip Cravits, Burbank, Calif., assignor to Concept Development Corporation, Beverly Hills, Calif.
Filed June 16, 1965, Ser. No. 464,485
Int. Cl. A47l *7/00*
U.S. Cl. 15—302 **12 Claims**



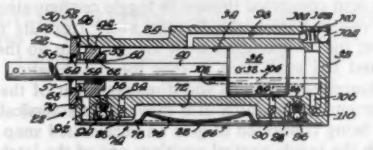
An apparatus mounted on wheels incorporating brush means and spray means to clean the flights of an operating escalator has guide means to engage the fixed balustrades of the escalator for accurate positioning of the apparatus and has means to immobilize the apparatus for a cleaning operation. In response to such immobilization, a self-aligning vacuum nozzle and brush carriage is lowered into operating position. A yieldingly extensible forward structure makes guiding contact with front surfaces of descending flights of steps to brush the front and top surfaces thereof.

3,584,330
PORTABLE POWER OPERATED WINDOW WASHER
Gus W. Wallin and James H. Hahn, Waterbury, Conn., assignors to Scovill Manufacturing Company, New Haven, Conn.
Substituted for abandoned application Ser. No. 602,905, Dec. 19, 1966. This application June 16, 1969, Ser. No. 839,770
Int. Cl. A47l *1/08*
U.S. Cl. 15—375 **7 Claims**



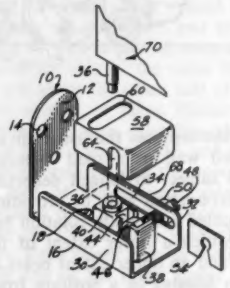
A portable self-contained power operated window washer characterized by the absence of auxiliary containers for clean or used cleaning fluid and hose connections therefor, comprising a housing having two parts detachably connected together, one part holding fluid absorbent material and the other suction producing means, the parts being separable to permit the absorbent material to be removed, rinsed, squeezed and reinserted in the housing. The housing part which contains the absorbent material includes a nozzle having a squeegee blade for contacting a wetted surface to be cleaned, an elongated mouth adjacent the blade through which fluid is drawn by suction from said surface into the absorbent material and means for preventing build-up of foam on the nozzle.

3,584,331
HYDRAULIC DOOR CHECKING MECHANISM
Richard E. D'Hooge, Wood Dale, Ill., assignor to Rixson Inc., Franklin Park, Ill.
Filed June 13, 1969, Ser. No. 832,900
Int. Cl. E05f *3/12*
U.S. Cl. 16—82 **8 Claims**



A hydraulic door checking mechanism, for a door control device, having a single hydraulic cylinder and a self-contained fluid system with a piston having a piston rod movable into and out of the fluid system and providing door checking in both directions of operation and latch control, together with sealing means for the shaft and a variable volume reservoir for the hydraulic fluid.

3,584,332
PIVOT BRACKET FOR FOLDING DOORS
Lloyd S. Taylor, % Float-Away Door Co., 1173 Zonolite Road NE., Atlanta, Ga. 30306
Filed Feb. 13, 1967, Ser. No. 615,685
Int. Cl. E05d *7/04, 7/08*
U.S. Cl. 16—130 **10 Claims**



A pivot bracket to be fastened near the corner to support the pivot pin in a folding or swinging door and having both longitudinal and lateral adjustment after the door and pivot pin is in place, by means of a sliding block in a channel on the bracket which has a lateral or transversely slidable pivot block carrier movable inside and which has a slot through which the pivot pin extends into

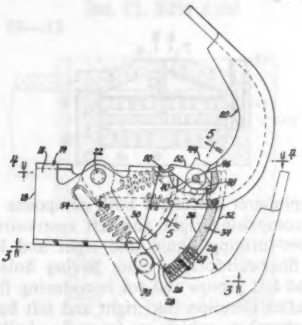
the pivot block. A threaded stud provides both longitudinal and lateral adjustment through threaded engagement with the inner pivot block and selective movement in a slot on the channel and a locking nut thereon.

3,584,333

DOOR HINGE HAVING AN INFINITE POSITION HOLD OPEN DETENT

John M. Hakala, Mount Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 5, 1969, Ser. No. 882,622
Int. Cl. E05d *11/08*
U.S. Cl. 16—14 4 Claims



A hinge box includes spaced walls pivotally supporting a hinge arm of U-shaped cross section. A cantilevered portion of the lower hinge box wall includes an arcuate channel portion on which is mounted a friction member having an arcuate surface generated about the hinge axis. A detent member has a main portion located between the walls of the hinge arm and an elongated end portion located below the lower wall of the hinge arm and connected to the main portion by an intermediate portion The detent member is pivotally supported on the hinge arm by a pin extending between the main and end portions of the detent member and through the walls of the hinge arm. A spring extends between the main portion of the detent member and the hinge arm to position a linear contact edge of the elongated end portion for transverse linear contact with the arcuate surface of the friction member to provide a frictional restraint in the direction of swinging movement of the hinge arm. Upon reversal of the direction of swinging movement, the linear contact edge of the detent member digs into the friction member to provide a wedging restraint to hold the door against such reverse swinging movement. This wedging restraint can be overcome by the application of a predetermined force to the hinge arm to dig the linear contact edge further into the friction member and ultimately to swing the detent member on the hinge arm so as to provide a frictional restraint in the reversed direction of swinging movement and a wedging restraint in the initial direction of swinging movement.

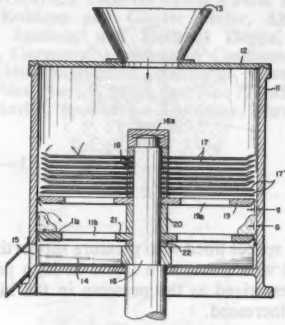
3,584,334

APPARATUS FOR MAKING SPHERICAL GRANULES

Nobuharu Moriya, Osaka, Japan, assignor to Fuji Denki Kogyo Co., Ltd., Osaka, Japan

Filed July 22, 1969, Ser. No. 843,330
Claims priority, application Japan, Aug. 7, 1968, 43/56,027
Int. Cl. B29b *1/03*
U.S. Cl. 18—1 8 Claims

An apparatus for converting pelletized powdered material into spherical granules having several tiers of rotary blades mounted in a cylindrical container with the blades being of a particular configuration to impart air currents which affect the travel of the pellets through the tiers



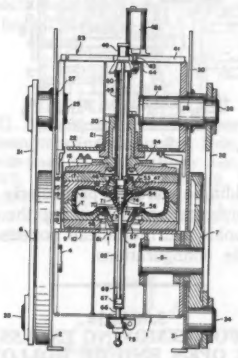
of blades, thereby achieving a high efficiency output of uniformly sized granules.

3,584,335

TIRE CURING PRESS WITH LOADER AND REMOVAL DEVICES

Ernest S. Ulm, Stow, and Benjamin Stoyanov, Akron, Ohio, assignors to NRM Corporation, Akron, Ohio

Original application Jan. 19, 1967, Ser. No. 610,419, now Patent No. 3,471,895, dated Oct. 14, 1969. Divided and this application Oct. 7, 1969, Ser. No. 864,416
Int. Cl. B29h *5/02;* B29c *3/00*
U.S. Cl. 18—2 9 Claims



A tire curing press having upper and lower complementary mold sections and a readily replaceable bladder shaping assembly urged by a post assembly to its axially extended position. A pilot on the loader and movable mold section is received in a socket on bladder and post assembly during loading and shaping operations of press cycle. A chuck underlies a bead of cured tire as press is opened to strip same from stationary mold section for movement with movable mold section.

3,584,336

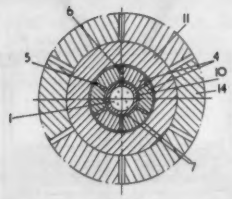
METHOD OF INCREASING THE STRENGTH OF A HOUSING AND A HIGH PRESSURE APPARATUS INCORPORATING A STRENGTHENED HOUSING

Baltzar Carl von Platen, Stockholm, Sweden, assignor to Etablissement Radiator, Vaduz, Liechtenstein

Filed Mar. 3, 1969, Ser. No. 803,648
Claims priority, application Sweden, Mar. 4, 1968, 2,780/68
Int. Cl. F16j *11/00*
U.S. Cl. 18—5 17 Claims

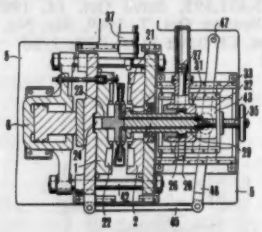
An improved housing for a high pressure chamber is described. The primary resistance to radial pressures

developed in the high pressure chamber is provided by a housing which is split into a number of separate pieces having gaps between, the gaps being included in one or



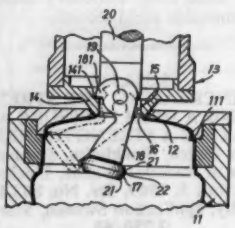
more closed spaces filled with pressure supporting material, i.e. material which acts as a liquid at high pressure, and which is pressurized as the pressure in the high pressure chamber is increased.

3,584,337
INJECTION BLOW MOLDING DEVICE
Katashi Aoki, 6037 Oaza Nanjo, Sakaki-machi, Hanishina-gun, Nagano-ken, Japan
Filed Dec. 27, 1967, Ser. No. 693,994
Claims priority, application Japan, Dec. 28, 1966, 42/85,408; Dec. 30, 1966, 42/85,833
Int. Cl. B29c *5/06*
U.S. Cl. 18—5 **5 Claims**



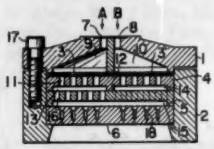
Injection molding apparatus, particularly a nozzle and runner gate configuration eliminating the necessity for plural sets of molds and multi-head nozzles in molding a variety of bottle configurations.

3,584,338
APPARATUS FOR REMOVING EXCESS MATERIAL FROM THE OPEN END OF HOLLOW OBJECTS HAVING RELATIVELY LARGE OPENINGS
Stefan Fischer, Im Korresgarten 21, and Rainer Fischer, Am Wildtor 2, both of Lohmar, near Cologne, Germany
Filed Oct. 3, 1968, Ser. No. 764,819
Claims priority, application Germany, Oct. 3, 1967, P 17 04 047.0
Int. Cl. B29c *17/07*
U.S. Cl. 18—5 **10 Claims**



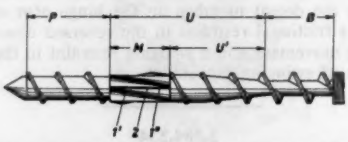
This invention relates to method and apparatus for removing the excess material from the open end of hollow objects having relatively large openings and made from thermoplastic material in a blow-moulding process, by cutting off such excess material by means acting from the inside of the container outward against the interior walls of the blowing mould.

3,584,339
SPINNERET FOR BOTH COMPOSITE AND ORDINARY FIBERS
Yutaka Kamachi and Shigeyuki Miwa, Shiga-ken, Japan, assignors to Chisso Corporation, Osaka, Japan
Filed July 14, 1969, Ser. No. 841,426
Int. Cl. D01d *3/00*
U.S. Cl. 18—8 **1 Claim**



A novel spinneret useful for both composite and ordinary fibers comprising right and left reservoirs for two kinds of fiber-forming liquid and right and left filters therefor; a filter-reinforcing plate having holes divided into right and left groups and for introducing fiber-forming liquids after filtration into right and left hand liquid distribution chambers, which are formed as hollow spaces on the back surface of the plate; a distribution plate having holes for distributing the liquids from the chambers into straight, distributing grooves formed on the back surface of the plate, at equal intervals and in parallel with each other, the liquid from the right and left chambers being alternately distributed into subsequent grooves; and a nozzle plate having spinning holes positioned under the middle part of each two adjacent grooves and opened to each of the said two adjacent grooves to receive the liquids from both of the said two adjacent grooves and further arranged so that each hole can form a square having the pitch same with the distance between two adjacent grooves, whereby the two kinds of liquid extruded from the holes can form composite fibers and if the distribution plate is rotated by 90°, they can form ordinary fibers.

3,584,340
EXTRUDER
Klaus Koch, Sarstedt, Germany, assignor to Paul Troester Maschinenfabrik, Hannover-Wulfel, Germany
Filed Aug. 28, 1968, Ser. No. 755,947
Claims priority, application Germany, Sept. 1, 1967, P 17 29 364.0; June 1, 1968, P 17 78 770.1
Int. Cl. B29b *3/22;* **B29f** *3/06*
U.S. Cl. 18—12 **8 Claims**



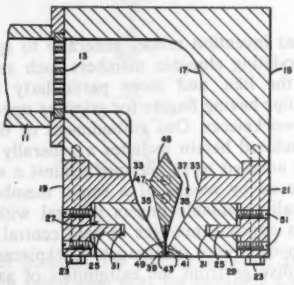
Extrusion apparatus of the kind including a worm for driving heat-softenable material along a tubular housing in which the worm rotates between a hopper at one end of the tube and an extrusion die at the other end of the tube, the worm having an intermediate section of its length dissimilar from feed and discharge sections on its opposite sides which is adapted to cause mixing and compression of the material passing along the tube, wherein the said intermediate section includes helical fins, preferably of much lesser pitch than that of the remainder of

the worm, between opposite ends of every two of which there extends an intermediate fin generally in a plane containing the longitudinal axis of the worm and of lesser height radially of the worm than said helical fins.

3,584,341
APPARATUS FOR MAKING NETLIKE STRUCTURES

Theodore H. Fairbanks, Liverpool, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Original application July 27, 1967, Ser. No. 656,501. Divided and this application Sept. 22, 1969, Ser. No. 859,941
Int. Cl. B29f *3/00*
U.S. Cl. 18—12 **7 Claims**

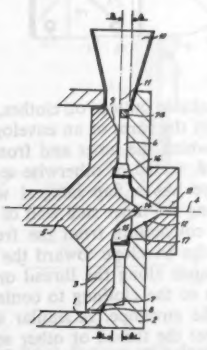


Apparatus for making extruded netlike structures which includes a pair of opposing die-carrying members having sets of cooperating, complementary die-forming orifices through which plastic material is extruded, and a separator plate disposed between such members and having slots spaced at intervals thereof which provide for communication between orifices in the opposed members at only certain of their aligned positions.

3,584,342
ROTARY PLATE TYPE EXTRUDER

Bernard Neuville, Versailles, France, assignor to Produits Chimiques Pechiney-Saint-Gobain, Neuilly-sur-Seine, France

Filed Oct. 3, 1968, Ser. No. 764,860
Claims priority, application France, Oct. 12, 1967, 124,231
Int. Cl. B29f *3/00*
U.S. Cl. 18—12SM **11 Claims**

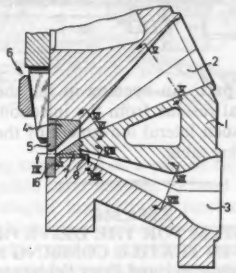


A rotary plate type extruder having spaced surfaces with a gap between and with an extrusion opening through an axial portion of one of the plates and in which the surface in the central axial portion of at least one of the plates is recessed to increase the width of the gap in communication with the extrusion opening.

3,584,343
EXTRUSION HEAD FOR COMPOSITE PROFILES, ESPECIALLY TREAD STRIPS FOR TIRES

Wolfgang Kohlepp and Günter Meier, Ahlem, Heinz Moeller, Apelern, and Gerhard Deppe, Hannover-Bothfeld, Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hannover, Germany

Filed Nov. 1, 1968, Ser. No. 772,655
Claims priority, application Germany, Nov. 2, 1967, P 17 29 599.7
Int. Cl. B29f *3/04*
U.S. Cl. 18—13 **7 Claims**

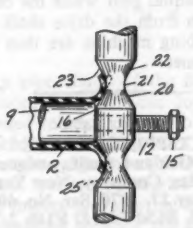


An extrusion head for articles of rubber and rubber-like materials which has first and second passage means for respectively conveying therethrough different materials, and in which a pre-templet directs the flow of the second passage means to flow to lateral portions of a finish-templet means while the flow from the first templet passage means passes to a section in the first templet means which is between said lateral portions.

3,584,344
PIPE FLARING TOOL

Bengt G. Bjalme, Erie, Pa., assignor to Reed Manufacturing Company, Erie, Pa.

Continuation-in-part of applications Ser. No. 796,518, Feb. 4, 1969, and Ser. No. 828,260, May 27, 1969. This application Aug. 29, 1969, Ser. No. 854,060
Int. Cl. B29c *17/00*; B21d *41/02*
U.S. Cl. 18—19 **9 Claims**



A tool for flaring thermoplastic pipe having an arbor received in the bore of the pipe, a cross bar handle having rounded surfaces engaging the pipe end and locally stretching and flexing it axially inward and radially outward into a flare and a screw threaded connection between the handle and the arbor for feeding the handle toward the arbor as the handle is rotated.

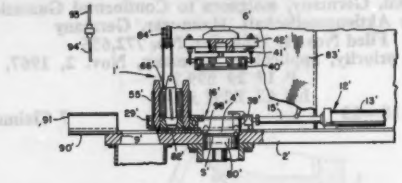
3,584,345
DIE CASTING APPARATUS

Keith P. Beastrom, 482 Liberty St., Conneaut, Ohio 44030

Filed Dec. 9, 1968, Ser. No. 782,281
Int. Cl. B29f *1/00*
U.S. Cl. 18—30 **17 Claims**

A die casting apparatus and method in which the upper mold part is carried by a press head for vertical movement toward and away from an injection cylinder, and

the lower mold part is attached to a shear extension for lateral movement between the injection cylinder where molten metal is injected into the closed mold halves and a stripping table where the cast article is removed from



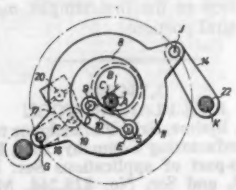
the lower mold part. An opening in the shear extension receives the metal residue from the injection cylinder for disposal during such lateral movement of the lower mold part to the stripping table.

3,584,346

CONTROL SYSTEM FOR THE DRIVE OF DETACHING ROLLERS IN TEXTILE COMBING MACHINES

Hansulrich Eichenberger and Peter Schwengeler, Winterthur, Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed Sept. 23, 1968, Ser. No. 761,720
Claims priority, application Germany, Sept. 30, 1967, M 75,739
Int. Cl. D01g *19/20*
U.S. Cl. 19—232 **10 Claims**



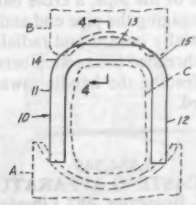
An eccentric is freely mounted on the comb drive shaft to impart a reciprocating movement to one of the input shafts of the differential gear while the other input shaft is uniformly driven from the drive shaft. The detaching rollers of the combing machine are thus reciprocated in a pilgrim step manner.

3,584,347

CLIPPING DEVICE

Karl A. Klenz, Oakland, Calif., assignor to Rheem Manufacturing Company, New York, N.Y.

Filed May 27, 1970, Ser. No. 40,853
Int. Cl. B65d *77/18*; F16b *2/26*
U.S. Cl. 24—30.5W **9 Claims**



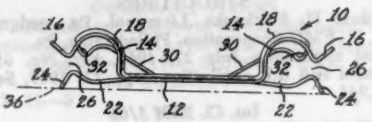
A deformable generally U-shaped sealing clip for providing a tight seal around the neck of a flexible container. The clip is shaped in cross section to provide optimum strength and is formed along its inner side to seal material that is particularly resistant to deformation.

3,584,348

SPRING CLIP

Edmund John Soltysik, Chicago, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Feb. 4, 1970, Ser. No. 8,487
Int. Cl. F16l *3/02*; F16b *17/00*
U.S. Cl. 24—81CC **9 Claims**



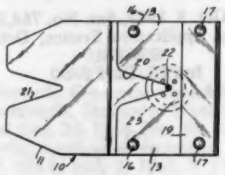
The present invention relates generally to spring clips for accommodating elongate members such as conduits, cables and the like, and more particularly to double ended type clips having fingers for gripping opposite sides of elongate workpieces. One embodiment of the present invention disclosed herein includes a generally plate-like body section adapted to be clamped against a supporting work surface as by means of a screw member, and a pair of laterally yieldable fingers integral with and extending from opposite margins of said central body for impinging opposed sides of elongate workpieces. Integral lip portions diverge from the extremities of said fingers and extend laterally beyond the general central plane of the body, whereby upon movement of the body toward an associated mounting surface the workpiece impinging aggressiveness of the fingers will be materially increased.

3,584,349

BUTTON PROTECTOR

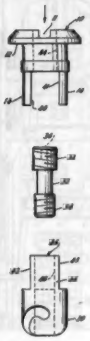
Harry S. Shubart, 319 Kedzie, Evanston, Ill. 60202

Filed Dec. 4, 1969, Ser. No. 882,089
Int. Cl. A44b *1/14*; D06f *83/00*
U.S. Cl. 24—113 **10 Claims**



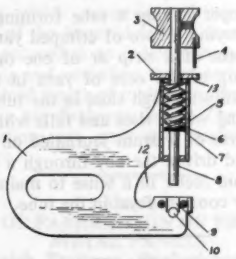
Protector for breakable buttons on clothes, during cleaning of the clothes, in the form of an envelope made from a plastic sheet, in which the inner and front sides of the envelope are riveted, sealed or otherwise secured to each other. The envelope has a flap integral with the front side and folded along the inner side wall of the envelope. A converging slot converging from the free end of the inner side wall of the envelope toward the center of the inner side wall extends along the thread or other means securing the button to the clothing to contain the button in the pocket of the envelope. A similar slot is formed in the flap to fit over the thread or other securing means for the button, when the flap is in its closed position. The flap may be detachably secured to the inner side wall by a strap extending along the inner side wall within which the flap fits, a snap fastener or by Velcro hook and pile fabric material, to enable ready removal of the envelope from the button, and the positioning of the button within the pocket of the envelope while on the clothing.

3,584,350
ADJUSTABLE FASTENER ASSEMBLY
Peter Schenk, West Islip, N.Y., assignor to Dzus Fastener Co., Inc., West Islip, N.Y.
Filed June 10, 1969, Ser. No. 831,938
Int. Cl. A44b *17/00*
U.S. Cl. 24—221K 20 Claims



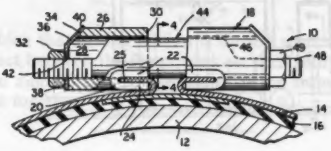
A fastener element for joining separate members is provided with spiral cam slots for engaging a spring connecting to one of the members. When the fastener assembly is rotated, the spring is urged into the cam slots to fasten the spring and element together. A connecting member having reversely threaded sections joins a housing with the fastener element. When the connecting member is axially rotated the fastener element will ride on a threaded section of the connecting member to permit adjustment of the length of the fastener assembly. A resilient member can also be included in the assembly to prevent uncoupling of the assembly from the fastened members due to unintentional axial rotation.

3,584,351
LAWN MOWER HOOK FOR GRASS CATCHER
John Sliwinski, 4708 E. 88th St., Garfield Heights, Ohio 44125
Filed Apr. 8, 1969, Ser. No. 815,274
Int. Cl. A44b *13/02*
U.S. Cl. 24—239 3 Claims



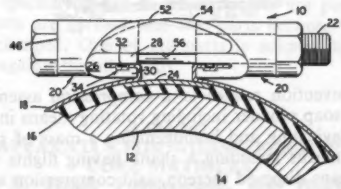
A two position hook for use with lawn mowers or the like comprising a rod spring biased across and enclosing a C-shaped slot to retain a member within said slot, and a locking pin and associated washer adapted to lock the rod against the bias of the spring to maintain the rod in an open position permitting said member to be moved into and out of said slot.

3,584,352
PIPE CLAMP WITH BRIDGE BOLT
Frank E. Turner, 3 Greenfield Court, San Mateo, Calif. 94403
Filed Oct. 27, 1969, Ser. No. 869,724
Int. Cl. F16l *19/00*
U.S. Cl. 24—279 7 Claims



A pipe clamp comprised of a pair of rigid lugs fixed to the ends of flexible band adapted to bend around a pipe. The lugs are shaped internally to receive one or more bolts each of which has a central section with an enlarged non-circular cross section providing increased strength to resist bending and having integral threaded end portions.

3,584,353
LOW BOLT CLAMP WITH STABILIZING FINGERS
Telford L. Smith, 1206 Lake St., Millbrae, Calif. 94030
Filed Oct. 27, 1969, Ser. No. 869,725
Int. Cl. F16l *19/00*
U.S. Cl. 24—279 3 Claims

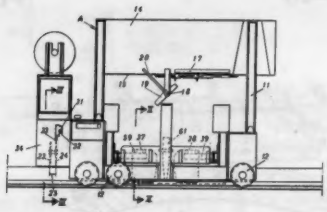


Rigid lugs on a pipe clamp of the flexible band type having one or more boss portions for retaining bolts which are positioned relatively close to the pipe surface and fingers on each lug extending from opposite sides of each boss portion to engage the opposite lug. The combination of the bolt location relative to the pipe and the action of the lug fingers prevents lug twisting or lifting when bolts are tightened to draw the lugs and the ends of the band together.

3,584,354
MACHINE FOR MOULDING THE SHORT SIDES OF BUILDING ELEMENTS HAVING A U-SHAPED CROSS SECTION
Per Olof Jonell, Goteborg, and Sven Melker Nilsson, Kallered, Sweden, assignors to Ingeniorsfirman Nilcon Aktiebolag, Kallered, Sweden
Filed Jan. 6, 1970, Ser. No. 899
Claims priority application Sweden, Jan. 16, 1969, 543/69
Int. Cl. B28b *7/14, 23/02*
U.S. Cl. 25—1R 9 Claims

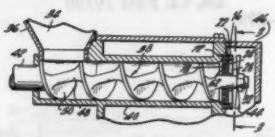
A machine for moulding the end walls of concrete building elements of U-shaped cross section, the side and bottom walls of which are being moulded in considerable lengths in sliding moulds. The machine comprises two

inner moulds being spaced apart in the longitudinal direction of the machine and serving to form one side of the mould for moulding the end wall, and a blade adapted to



be raised and lowered in the gap between the inner moulds and to serve as an intermediate mould when moulding the end walls of two successively disposed building elements.

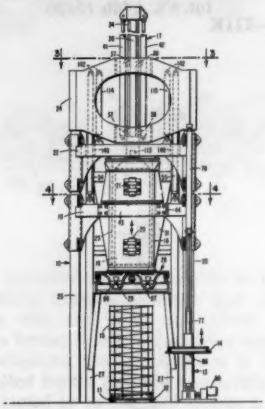
3,584,355
COMPRESSION ASSEMBLY FOR SOAP PLODDER
Charles Frederick Fischer, Jersey City, N.J. assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Nov. 29, 1968, Ser. No. 780,030
Int. Cl. C11d *13/18*
U.S. Cl. 25—8 **7 Claims**



This invention relates to a compression assembly for use in a soap plodder including rotating means in a housing for levigating and homogenizing a mass of soap, the rotating means including a shank having flights and end flight means disposed thereon, said compression assembly being located adjacent the end flight means for permitting uniform plasticizing of the soap. The compression assembly comprises a first compression plate means having a plurality of bores extending therethrough for partially plasticizing the soap, perforate means located adjacent the first compression plate means and closely spaced thereto for forcing the partially plasticized soap therethrough, and second compression plate means having elongated slots therein and located adjacent and closely spaced to the perforate means for preventing blockage of the perforate means by accumulated soap during processing of the soap under pressure from said rotating means.

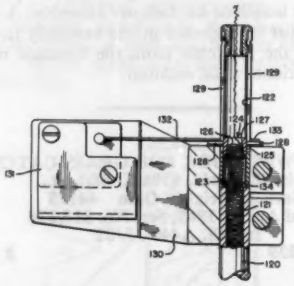
3,584,356
APPARATUS FOR PRODUCING CONCRETE PIPE
Carl R. Joelson, Venice, Fla., assignor to Autoval Pipe Machinery, Inc., Venice, Fla.
Filed Feb. 7, 1969, Ser. No. 797,606
Int. Cl. B28b *21/14, 21/18*
U.S. Cl. 25—30 **19 Claims**

An improved apparatus for forming hollow cylindrical bodies of reinforced concrete at a pouring station and including a bottom pallet, a pallet saddle, an outer jacket, a core mounted concentrically within and spaced from said outer jacket, means to feed concrete into the space between said core and said jacket, and a top pallet holding header. Vibrators are provided on the jacket, core and header to vibrate the concrete as the mold is filled. All of the apparatus is above ground with the jacket, core, and header being vertically movable in sequence to form a mold for making the reinforced concrete pipe. The bottom



ends of the jacket and core cooperate with sealing means incorporated in the pallet saddle to seal the bottom of the mold liquid tight.

3,584,357
PLUG CONTROL MEANS
Eugene Torello-Viera, Claymont, Del., assignor to Joseph Bancroft & Sons, Wilmington, Del.
Filed Jan. 31, 1969, Ser. No. 795,464
Int. Cl. D02g *1/12*
U.S. Cl. 28—1.7 **4 Claims**

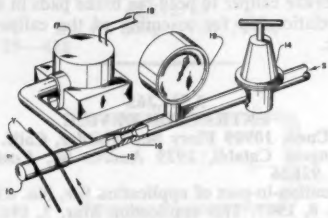


A stuffer crimper having a tube forming a crimping chamber and carrying a core of crimped yarn. A sensing device in the form of a strip or of one or more wires resting on the top of the core of yarn in the tube and extending outwardly through slots in the tube and joined to an external ring which rises and falls with the core. A winder in the form of a drum journaled on a constantly rotating shaft and driven thereby through a clutch which is actuated by said feeler in a sense to maintain the core at a substantially constant level in the tube.

3,584,358
PNEUMATIC ENDS OUT DETECTION APPARATUS
James E. Harris, Bristol, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 28, 1970, Ser. No. 6,612
Int. Cl. D02h *13/02*
U.S. Cl. 28—50 **8 Claims**

Pneumatic apparatus for detecting the loss of running yarn ends during a textile manufacturing operation. Detection of ends out is accomplished by guiding each yarn

end over an orifice through which pressurized gas is escaping from a confined area, thereby impeding the escape of gas and establishing a back pressure in the confined area. Means are provided for monitoring such back pressure and for providing a signal when the back



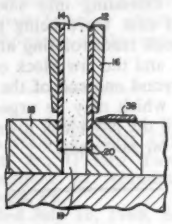
pressure drops below a predetermined level, such drop in pressure being occasioned by an end out. Also disclosed is a system in which the pressure in the sensing heads remains essentially constant and ends out are detected by changes in air flow.

3,584,359

MEASURED AND APPARATUS FOR DISPENSING MEASURED QUANTITIES OF HIGHLY OXYGEN REACTANT MATERIALS

Leo C. Werner, Cedar Grove, and Thomas J. Brady, Irvington, N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 7, 1969, Ser. No. 805,232
Int. Cl. H01j *9/00*
U.S. Cl. 29—25.11 **3 Claims**



An apparatus and method for introducing highly oxygen reactant materials in measured quantities into a gas discharge device which comprises cutting off a predetermined length of the material from a source of the material which is encased in an indeterminate length of polyethylene tubing and extruding the material from the cut-off predetermined length of tubing into the exhaust and fill tubulation of a gas discharge device. The cutting and extruding operations are preferably performed in an inert atmosphere.

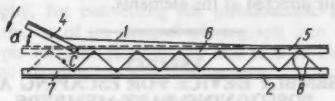
3,584,360

METHOD OF FABRICATION OF PRESTRESSED METAL PANELS

Viktor Ivanovich Trofimov, Zoologicheskaya ulitsa 30, kv. 68, and Gennady Grigorievich Mikhailov, Bolotnikovskaya ulitsa 24, korpus 7, kv. 65, both of Moscow, U.S.S.R.

Filed Apr. 23, 1969, Ser. No. 818,612
Int. Cl. B23p *11/02, 17/00*
U.S. Cl. 29—155 **1 Claim**

A method of fabrication of prestressed metal panels consisting in that the metal framework of the panel is built up of at least two sections jointed so that one section can be turned with relation to the other; one end of the skin is fastened to the turning section of the framework set at an angle to the other section while its other end is fastened to the opposite edge of the other section of the framework



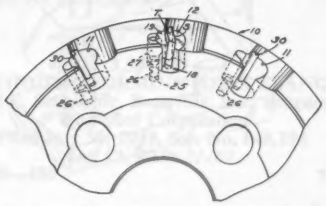
after which the turning section is turned around the point of contact between the framework sections until their butt ends are aligned and both sections of the framework are fastened together.

3,584,361

MILLING HEAD

Donald S. Erkfritz, Rockford, Ill. assignor to Progressive Welder & Machine Co., Pontiac, Mich.

Filed Apr. 24, 1969, Ser. No. 818,875
Int. Cl. B26d *1/12*
U.S. Cl. 29—105 **20 Claims**



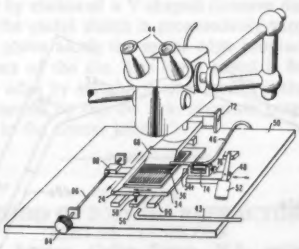
A milling head comprising a plurality of circumferentially spaced recesses in which inserts are positioned. The inserts are formed into two parts between which a tool is clamped. One of the parts is adapted to wedge the tool against the other part.

3,584,362

APPARATUS FOR WIRING FERRITE CORE MATRICES

Herbert K. Hazel, Poughkeepsie, and Wolfgang F. Mueller, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

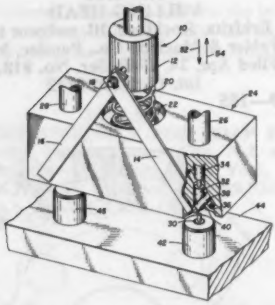
Original application Apr. 30, 1965, Ser. No. 452,101, now Patent No. 3,460,245, dated Aug. 12, 1969. Divided and this application Mar. 12, 1969, Ser. No. 828,408.
Int. Cl. H05k *13/00*; B23p *19/04*; H01f *7/06*
U.S. Cl. 29—203MM **7 Claims**



This specification describes the wiring of ferrite core matrices. First a number of wires with apertured ferrite elements strung on them are arranged side by side to form columns of ferrite elements that slide back and forth on the wires. Thereafter, one element on each length of wire is advanced to a wiring position to form a first selected row of ferrite elements. Then a row wire is inserted

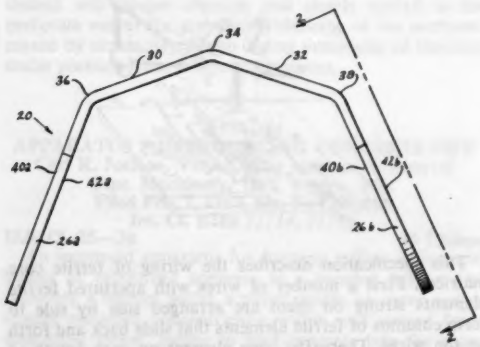
through the ferrite elements in the first selected row. After the row wire is inserted, the ferrite elements of the row are tested. Once the ferrite cores in the first selected row test good, the process is repeated for a second row. Preferably, the selected row of ferrite elements is held in position by air directed at the elements.

3,584,363
ASSEMBLY DEVICE FOR ESCAPING AND POSITIONING PART MEMBERS
James R. McGowan, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 27, 1968, Ser. No. 787,383
Int. Cl. B23q 7/10
U.S. Cl. 29—211 6 Claims



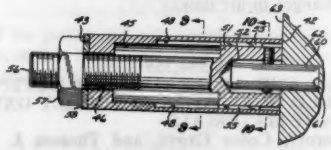
This disclosure relates to an automatic escaping and positioning device for supplying part members to an assembly station. A plurality of escaping passages in a support member, are adapted to receive the parts to be assembled. A clamping element arranged in a slot communicating with the escaping passages, and connected to a linkage element, successively assumes a first position in the slot, clamping a part member in the escaping passage, and then a second position in the slot releasing the part member for gravity free fall toward the assembly station, in response to predetermined timed actuation of the linkage element.

3,584,364
SPACER FOR SEPARATING DISC BRAKE PADS
George L. Steck, 320 Neal Ave, Dayton, Ohio 45405
Filed Dec. 6, 1968, Ser. No. 781,728
Int. Cl. B23q 7/10
U.S. Cl. 29—212 8 Claims



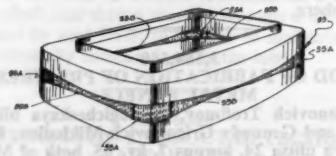
A spacer device for separating the brake pads in a disc brake caliper comprises a one-piece rod bent at its opposite ends to form spacers each having the general shape of a hook. The central portion of the rod forms a handle and the spacers extend angularly from the handle so that the spacers, while diverging each from the other with increasing distance from the handle, have generally confronting side surfaces. The hook design allows the spacers to be wedged between the brake pads of a disc brake caliper to hold the brake pads in separated parallel relationship for assembly of the caliper over a brake disc.

3,584,365
EXTRACTOR DEVICE
Joe Ray Cuen, 10909 Flory St., Whittier, Calif. 90606, and Angelo Cataldi, 2929 Andros St., Costa Mesa, Calif. 92626
Continuation-in-part of application Ser. No. 636,705, Mar. 8, 1967. This application Mar. 7, 1968, Ser. No. 711,251
Int. Cl. B23p 19/04
U.S. Cl. 29—256 1 Claim



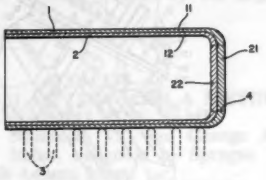
An extractor device including a cylindrical sleeve having an axial bore in which is received a jaw block for movement along the axis of the sleeve, said jaw block having a centrally disposed hole with three screws equally spaced apart and extending into said jaw block at a right angle to said axis, there being provided means to prevent the jaw block from rotating about said axis relative to that sleeve, and the jaw block carrying a threaded shaft extending beyond one end of the sleeve and receiving thereon a nut which may be urged against that end of the sleeve to pull the jaw block towards that end when the nut is rotated on said shaft.

3,584,366
PROCESS FOR MANUFACTURE OF SHADOW MASK FRAMES
Ralph E. Roper, Indianapolis, Ind., assignor to Wallace Expanding Machines, Inc.
Filed Aug. 7, 1968, Ser. No. 750,856
Int. Cl. B23p 17/00
U.S. Cl. 29—412 5 Claims



A process for making shadow mask frames for television sets wherein a closed workpiece is expanded to form a cluster of two shadow mask frames, the workpiece is trimmed to separate the frames and the frames are stuffed to remove the residual stresses therein.

3,584,367
METHOD FOR PRODUCING CORRUGATED TUBES HAVING MULTIPLE WALLS
Jorgen Kiersgaard, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark
Continuation of application Ser. No. 585,387, Oct. 10, 1966. This application Aug. 13, 1969, Ser. No. 849,930
Claims priority, application Germany, Oct. 9, 1965, 48,392/65
Int. Cl. B23p *17/00, 19/04*
U.S. Cl. 29—421 5 Claims



The invention relates to a method for producing corrugated tubes having multiple walls which may be used as bellows and have other uses. Starting with two thin plates, a temperature resistant protective coating of a material such as titanium is applied to at least one plate and the plates are superimposed with the coating being between the plates. The plates are subjected to a deep drawing operation to form a double walled cup shaped member which is subsequently subjected to a corrugating operation. The temperature-resistant coating prevents the welding together of the two plates during the drawing operation so that engaging portions of the plates are relatively displaceable during the corrugating operation. This mobility or relative displaceability of the plates prevents stresses from forming which would otherwise cause undesired distortions of the metal during the corrugating operation.

3,584,368
TITANIUM FABRICATION
Lowrie B. Sargent, Jr., O'Hara Township, Allegheny County, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.
No Drawing. Filed July 10, 1968, Ser. No. 743,620
Int. Cl. B21j *1/00;* B23p *17/00*
U.S. Cl. 29—424 4 Claims

Use of stainless steel envelopes in heating and forging titanium billets. Formation of scale and alpha case is reduced.

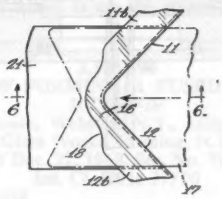
3,584,369
PROCESS OF MAKING REINFORCED LENTICULAR SHEET
Roger Lannes de Montebello, 165 E. 66th St., New York, N.Y. 10021
Filed Oct. 11, 1967, Ser. No. 674,556
Int. Cl. B23p *3/00, 25/00*
U.S. Cl. 29—458 6 Claims

A process of forming a lenticular sheet for use in integral photography having an intermediate apertured metal sheet which acts as a reinforcing member and/or as a diaphragm and/or as a field-limiting member, the apertures being coaxial with the lenslets of the lenticular sheet in which they are embedded or with which the sheet is associated. Preferably, the diaphragm layer is a thin apertured metal layer bonded on a second thicker metal layer, in certain instances, the thin layer being provided with diaphragm apertures at the principal points of the lenslets while the thicker layer has larger apertures, which serve as clearance apertures. In certain instances a second metal sheet similar to the first sheet may be provided with the apertures serving as field-limiting apertures, in which case they are preferably hexagonal. The reinforced lenticular sheets according to the present invention may be used for taking the original photographs in integral photography, for converting the pseudoscopic image of a hologram, or of an integral photograph into an autostereoscopic integral photograph, and also in certain instances for viewing integral photographs.

3,584,370
BONDING OF PYROLYTIC GRAPHITE
Arthur W. Moore and Herbert F. Volk, Parma, Ohio, assignors to Union Carbide Corporation
No Drawing. Filed June 7, 1968, Ser. No. 735,173
Int. Cl. B23k *31/02*
U.S. Cl. 29—472.9 19 Claims

A method for bonding pyrolytic graphite segments together is provided. A specific bonding agent selected from boron, boron compounds, moylbdenum, and silicon carbide is placed between the segments and the joint is heated to a suitable temperature while a pressure of at least 100 pounds per square inch is compressively applied in a non-reactive atmosphere.

3,584,371
METHOD OF FORMING JOINT FLANGE
Russel F. Schnepper, Boonville, Ind., assignor to Whirlpool Corporation
Filed July 30, 1969, Ser. No. 846,194
Int. Cl. B23k *31/02*
U.S. Cl. 29—480 7 Claims

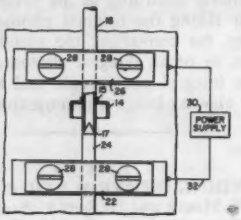


A method of forming a reinforced sheet metal corner joint wherein a flange is formed across a welded joint in such a way as to gather the metal toward the joint and effectively preclude splitting of the joint in the formation of the reinforcing flange. The metal is gathered toward the welded joint by means of a V-shaped concave die whereby the edge of the metal sheets is progressively turned as the die surfaces move along the metal edge progressively toward the apex of the die. The sheet metal is firmly held adjacent the edge by suitable clamp means permitting the edge to be turned by the die into accurate perpendicular relationship to the corner joint.

3,584,372
METHOD OF JOINING REFRACTORY METAL MEMBERS
Daniel A. Larson, Cedar Grove, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 14, 1968, Ser. No. 728,943
Int. Cl. B23k *31/02, 35/38*
U.S. Cl. 29—494 1 Claim

A method for sealing the niobium end cap of a ceramic arc tube to the tantalum exhaust and fill tubulation comprising the steps of: placing the tubulation through a close fit aperture in the end cap, positioning a niobium or titanium ring over the tubulation in a position contact-

ing both the end cap and the tubulation at their juncture, and passing sufficient electric current through the tubulation to cause the ring to melt and seal the end cap to the tubulation.

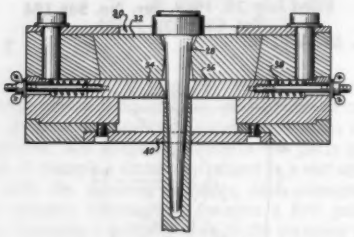


3,584,373

CAVITY FORMING APPARATUS AND METHOD

Harry P. Schane, Lafayette Hill, Pa., assignor to The Budd Company, Philadelphia, Pa.

Filed June 30, 1969, Ser. No. 837,455
Int. Cl. B23p *13/04*
U.S. Cl. 29—557 5 Claims



A method of forming an irregular shaped cavity in a metallic member includes the steps of drilling a hole in the member. A relatively large punch is then inserted into the drilled hole to expand the hole while the metal member is subjected to heat. After the member is cooled, a second punch, conforming in size and shape to the cavity to be formed, is inserted into the expanded hole. The member is then compressed around the second punch to cause the hole to conform to the size and shape of the second punch.

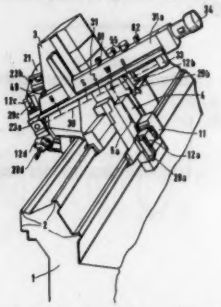
3,584,374

MACHINE TOOL WITH AUTOMATIC TOOL CHANGE

Hanspeter Spuhler, Litchfield, Conn., assignor to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland

Filed Sept. 5, 1968, Ser. No. 757,641
Claims priority, application Switzerland, Sept. 5, 1967, 12,404/67
Int. Cl. B23q *3/155;* B23b *7/00*
U.S. Cl. 29—568 3 Claims

Machine tool with tools fixed in holders having a rotatable drum magazine for storing a number of holders. Conveying means are provided for the automatic transfer of said holders in a predetermined sequence between the drum magazine and a working position of the tools. The holders are fixed in an interchangeable manner on the drum magazine and on a holder support which is disposed on a slide capable of sliding in one coordinate direction on a guiding part by means of a drive. The conveying means has at most a first and a second transfer path for said holders. The first path runs parallel to the direction of the coordinate of said slide and the second path is arranged on said guiding part being directed from said drum magazine mounted in said guiding part as a beginning point towards a common intersection point of said first and second transfer paths at which point two holders for exchange moved in common by a driver, change their transfer path and mutually change places in relation to the holder support and also to the driver which can be moved on the second transfer path by means of a second drive.

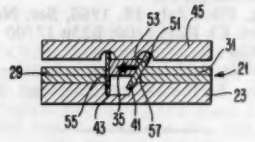


3,584,375

PROCESS FOR MANUFACTURING A MAGNETIC SOUND HEAD CORE

Charles O. Gingerich and Eugene P. Heupel, Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 9, 1969, Ser. No. 790,139
Int. Cl. H01f *7/06*
U.S. Cl. 29—603 11 Claims



A magnetic sound head core having a record-playback gap and an erase gap whose longitudinal axes are disposed at an angle to each other is assembled from a U shaped magnetizable body of, for example, mumetal, one side of which is first fixed to a wear plate. A section of the magnetizable body is ground away to divide the body into two members whose opposing faces are non-parallel and, at the same time, a groove is formed in the face of the wear plate below the ground away portion of the magnetizable body. The two members remain fixed to the plate which holds them in their original location and a third magnetizable member and two gap filling non-magnetizable shims are provided to fill the channel between the two members. One end of the third magnetizable member has a cross section similar to that of the channel but of lesser dimension to provide the record-playback and erase gaps

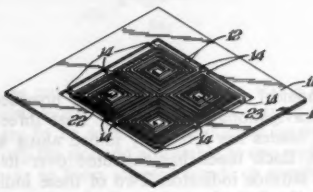
on either side which are filled by the shims. Preferably, the combined dimension of the shims and the third member is slightly greater than the width of the channel so that when the shims and the third member are forced into the channel by applying vertical pressure to a second wear plate placed over them, they are retained in interference contact with the faces of the two members. As the third member and shims enter the channel, the co-acting angled faces of the shim and members forming the angled gap, act to force all of the parts into intimate contact with each other due to the camming action provided by the horizontal component of force created by the angled surfaces.

3,584,376

MICROSTRIP DELAY LINE AND A METHOD OF MANUFACTURING SAME

David C. Howe, Stamford, Vt., and George A. Senf, North Adams, Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Oct. 25, 1968, Ser. No. 770,679
Int. Cl. H05k 3/06
U.S. Cl. 29—625 **4 Claims**



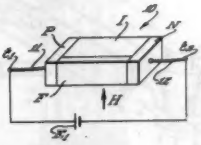
A microstrip delay line is formed by etching a metal film to a highly-defined pattern, gold-plating the pattern and bonding the plated pattern onto a ceramic base.

3,584,377

METHOD OF MAKING A MAGNETO-RESISTANCE ELEMENT

Toshiyuki Yamada, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed July 30, 1968, Ser. No. 748,764
Claims priority, application Japan, Sept. 23, 1967, 42/61,133; Dec. 29, 1967, 43/84,771
Int. Cl. H01j 7/66
U.S. Cl. 29—583 **18 Claims**



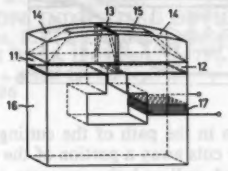
Magnetoresistance elements are often used in pairs and it is desirable to have matched elements with similar characteristics for operating in balanced circuits. The present disclosure discloses methods of constructing magnetoresistance elements so that they are matched and have similar characteristics by utilizing thin film techniques that allow elements to be made on the same substrate and heat treated so as to assure uniformity of elements.

3,584,378

METHOD OF MAKING MAGNETIC HEADS WITH MEANS FOR PREVENTING SIDE EROSION

Simon Duinker, Hamburg, Germany, and Jules Bos, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of application Ser. No. 527,871, Feb. 16, 1966, which is a division of application Ser. No. 139,468, Sept. 20, 1961, now Patent No. 3,249,700. This application Sept. 7, 1969, Ser. No. 866,111
Int. Cl. H01f 7/06
U.S. Cl. 29—603 **1 Claim**



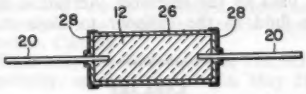
A method of manufacturing a magnetic head with a high resistance to wear includes the steps of joining first and second pole pieces with a non-magnetic material having a first softening temperature, and then placing a second nonmagnetic material having a second softening temperature lower than the first softening temperature of the first nonmagnetic material around the pole pieces surrounding the running surface of the magnetic head. The non-magnetic material has resistance to wear characteristics approximately equal to that of the material of which the pole pieces are constructed. In a further embodiment, the steps are reversed as are the softening temperatures.

3,584,379

METHOD OF FORMING A FUSED SUBSTRATE RESISTOR

Guenter H. Loose, Webster, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Dec. 27, 1968, Ser. No. 787,312
Int. Cl. H01c 17/00
U.S. Cl. 29—610 **7 Claims**



A capless electroconductive coating resistor. The resistor dielectric substrate is formed of particulate material by pressing or molding within which substrate wire leads are embedded. The green body so formed is fired to coalesce or sinter the particles and volatilize any organic constitutents. Thereafter, an electroconductive coating is applied over the suface of the substrate in electrical contact with the leads.

3,584,380

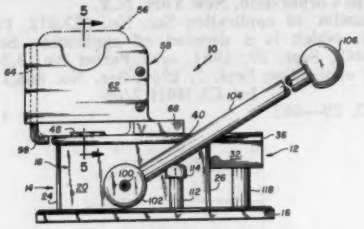
OPENER DEVICE FOR PHOTOGRAPHIC FILM CARTRIDGES

Henry Mehler, Rockaway Beach, and Charles Kalish, Bayside, N.Y., assignors to U.S. Photographic Equipment Corp., Corona, N.Y.

Filed Oct. 17, 1968, Ser. No. 768,484
Int. Cl. B67b 7/24
U.S. Cl. 30—6 **8 Claims**

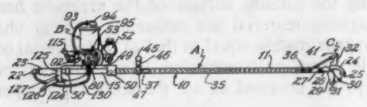
A tool for opening a motion picture film cartridge to facilitate removal of exposed film therefrom for develop-

ment, wherein a reciprocating die carrying a cutter member is driven by crank means through a cutting stroke and a holder mounts the film cartridge immovably in



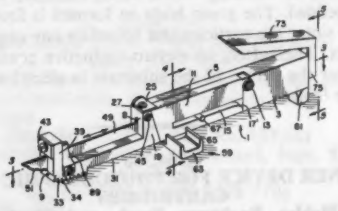
such a position in the path of the cutting stroke that the cutter member cuts away a portion of the cartridge casing between an end wall and the exposure aperture thereof to release the film for removal from the cartridge.

3,584,381
TREE TRIMMING AND PRUNING DEVICE
Joe M. Jamison, Webster, Wis. 54893
Continuation-in-part of application Ser. No. 501,928, Oct. 22, 1965, now Patent No. 3,409,983. This application Jan. 29, 1968, Ser. No. 701,327
Int. Cl. B26b *15/00*
U.S. Cl. 30—228 **6 Claims**



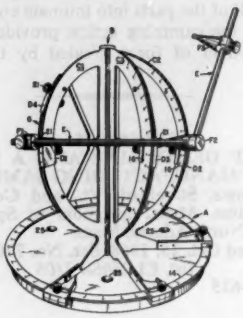
This invention relates to a completely self-contained portable tree trimming and pruning device for tree branches and the like. The device includes a pair of shearing blades which are hydraulically operated by a hydraulic cylinder. A light weight internal combustion engine drives a hydraulic pump through a suitable valve. Fluid from a reservoir normally flows through the pump and valve back to the reservoir. Actuation of the valve forces the fluid to the cylinder to close the shearing blades.

3,584,382
COMBINATION KNIFE AND COMESTIBLE HOLDER
Morris A. Breen, 109 Phillips St., Fulton, N.Y. 13069
Filed Nov. 25, 1968, Ser. No. 778,590
Int. Cl. B26b *29/02*
U.S. Cl. 30—294 **9 Claims**



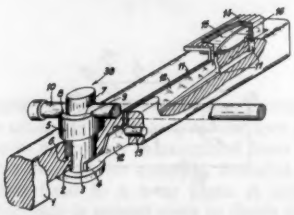
Combination knife and comestible holder, a cutting blade reciprocable between a pair of spaced apart comestible holders, means connected to said blade for manually causing cutting reciprocation thereof and the knife providing a body portion which is accessible for cleaning.

3,584,383
MECHANICAL ANALOGUE FOR NAVIGATIONAL PROBLEM
William A. Davis, Castro Valley, Calif., assignor to Davis Instruments Corporation, San Leandro, Calif.
Filed Dec. 12, 1968, Ser. No. 783,234
Int. Cl. G01c *21/20*
U.S. Cl. 33—1 **6 Claims**



A mechanical analogue solution is provided for the spherical navigational problem. At least three meridian contoured blades are hingeably joined along a common polar axis. Each blade has mounted over its meridian contour a latitude indicator. Two of these indicators are moved to the latitude and longitude of the sub-stellar spot of observed astrobodies. A severable attachment provides for measurement of the co-altitude of two astrobodies from the latitude indicators at their respective substellar spots. This severable attachment locates the remaining latitude indicator at the latitude and longitude of a solution to the navigational equation.

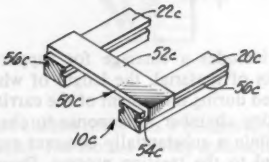
3,584,384
OSCILLATING AND SLIDING COUPLING, NOTABLY FOR COMPASSES
Luc A. M. Tagnon, Paris, France, assignor to Societe des Lunetiers, Paris, France
Filed Apr. 28, 1969, Ser. No. 819,797
Claims priority, application France, May 3, 1968, 150,480
Int. Cl. B43l *9/02*
U.S. Cl. 33—27 **4 Claims**



This coupling mechanism permitting the relative oscillating and sliding movements between a rod and a given point of a support is applicable more particularly to the construction of a bow compass wherein a spacer rod is connected to a given point of one of the compass legs by said coupling mechanism and to a corresponding point of the other leg by means of another coupling mechanism providing simply the oscillation and also the fine

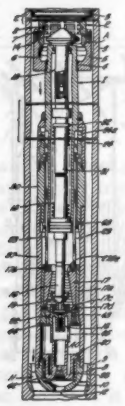
adjustment. The compass normally locked with precision in the desired angular position can be subjected either to considerable radius changes by moving its legs towards and away from each other by simply depressing with one finger a release key, or to small radius changes by rotating a fine-adjustment knob.

3,584,385
LETTERING GUIDE
Paul D. Booth, 743 E. Ada Ave., Glendora, Calif. 91740
Filed May 26, 1969, Ser. No. 827,710
Int. Cl. B41l *13/02*
U.S. Cl. 33—174B **3 Claims**



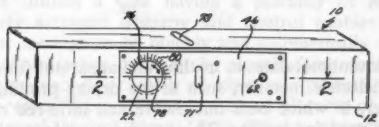
A lettering guide having an elongate frame containing a longitudinal lettering slot, and a plurality of stencil and spacer plates to be selectively positioned in side by side relation along the slot and adjustable to any position along the slot so as to form selected words or numbers.

3,584,386
PENDULUM RELEASE MECHANISM FOR SIGNALLING DRIFT INDICATORS
Raymond G. Taylor, Jr., Santa Monica, Calif., assignor to Byron Jackson, Inc., Long Beach, Calif.
Filed June 24, 1968, Ser. No. 739,550
Int. Cl. E21b *47/02*; G01c *9/00*
U.S. Cl. 33—205 **16 Claims**



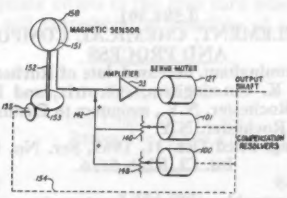
Signalling apparatus for producing pressure pulses in the stream of well drilling fluid in which the fluid flows through a pulse ring assembly having axially spaced rings cooperative with a knob reciprocable through said rings to provide restricted flow paths productive of the fluid pressure pulses in the drilling fluid stream in a number representative of the disposition of the well drilling string in the well bore in the vicinity of the drill bit, and in which a pendulum determines the extent of movement of said knob, and a releasable latch structure connects the pendulum to a selectively positionable coding rod which cooperates with stop balls to limit such movement of the knob, the releasable latch structure including a first member or catch to limit movement of the coding rod in one direction and a second member or latch for releasing the pendulum so that the latter may return to a starting position.

3,584,387
SLOPE INDICATING DEVICE
Walter Sturm, R.R. 1, Duntroom, Ontario, Canada
Filed Feb. 6, 1969, Ser. No. 797,118
Int. Cl. G01c *9/10*
U.S. Cl. 33—206 **5 Claims**



A slope indicating device in the form of a carpenter's level having a metal sphere operatively disposed in an annular chamber formed in a cylindrical shaped barrel disposed in the level. Prepositioned contacts are disposed on the inner wall of the annular chamber such that the sphere contacts certain of said contacts to close an electrical circuit and actuate an electric signal device when the level is disposed at preselected angles. The barrel is angularly adjustable and contains indicating means on its outer surface in coaction with a degree angle scale on the adjacent surface of the level to enable an operator to angularly position the barrel (and chamber) at a preselected angle after which the level itself may be positioned at such angle as will be indicated by actuation of the electric signal device.

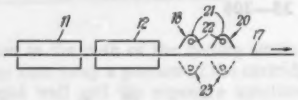
3,584,388
HEADING REFERENCE SYSTEM
Dimitri Petrov and Robert W. Wright, Montreal, Quebec, Canada, assignors to Aviation Electric Limited, Montreal, Quebec, Canada
Filed May 28, 1968, Ser. No. 732,562
Claims priority, application Canada, May 31, 1967, 991,873
Int. Cl. G01c *17/38, 19/36*
U.S. Cl. 33—225 **8 Claims**



A heading reference system for use in a vehicle to counteract the distorting effect of the metallic mass of the vehicle by determining the distance of the vehicle from a predetermined starting point, determining its direction of travel and providing resolver units for generating signals to compensate for the permanent magnetic disturbance effect of the earth's magnetic field concen-

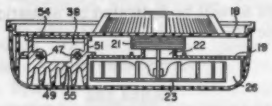
trated in the vehicle so that heading reference information can be obtained as to the present position and direction of travel of the vehicle.

3,584,389
PRINT DRYING
Kenneth Hilton, Three Bridges, Crawley, and Sidney Hirst, Crawley, England, assignors to Hirst (Microwave Heating) Limited, Sussex, England
Filed Feb. 3, 1969, Ser. No. 795,897
Int. Cl. B01k *5/00*
U.S. Cl. 34—1 **7 Claims**



The invention relates to method and apparatus for heating a dielectric member, such as for drying printing ink on paper, in which both microwave and infra-red radiation are used for heating. This enables a uniform rise in the temperature of the surface of the member, e.g. the coating up to the required temperature, e.g. the ink drying temperature, to be achieved.

3,584,390
HAIR DRYER
Harry H. Barker, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Aug. 1, 1968, Ser. No. 749,486
Int. Cl. A45d *20/18*
U.S. Cl. 34—99 **3 Claims**

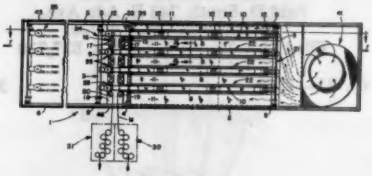


A portable, soft-bonnet hair dryer provided with a combination boiler and heater which serves to simultaneously convert water to steam and to heat forced air which is subsequently united with the steam for delivery to the bonnet. The hair dryer constitutes a self-contained unit, in that, the boiler unit, unlike prior art constructions, is disposed in the same housing with the fan and heater.

3,584,391
DRYING ELEMENT, CHEMICAL COMPOSITION AND PROCESS
Robert H. Cunningham, deceased, late of Rochester, N.Y., by Arlene K. Cunningham, executrix, and Eugene F. Wolfarth, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Oct. 31, 1969, Ser. No. 876,179
Int. Cl. F26b *5/16*
U.S. Cl. 34—9 **22 Claims**

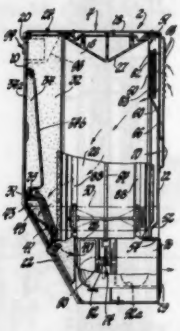
A liquid permeable, drying element, such as a thin coating, containing an organic polymeric desiccant cross-linked to a polymer, for example cross-linked to a support comprising a polymer, which can be the same as the organic desiccant or different from the organic, polymeric desiccant, rapidly removes diffusible liquid, especially water, from a permeable solid. A drying element, as described, can be used for removing diffusible liquid from layers of a photographic element such as photographic film.

3,584,392
MATERIAL TREATING APPARATUS
Alexander V. Alexeff, Cleveland, Ohio, assignor to Alexeff-Snyder Enterprises, Inc., Cleveland, Ohio
Filed Nov. 13, 1969, Ser. No. 876,474
Int. Cl. F26b *13/10*
U.S. Cl. 34—56 **12 Claims**



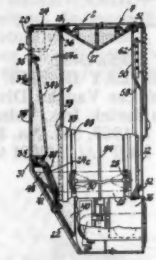
Apparatus includes a carriage for supporting a plurality of passes of material, the length of which is automatically varied during movement of the carriage into and out of a treating chamber in response to changes in line speed to maintain a substantially constant exposure time of the material to the treating process. Despite changes in the effective length of the material passes within the treating chamber, the amount of material supported by the carriage remains constant so that the tension on the material remains substantially the same, and the material is counterbalanced on the carriage whereby very little force is required to move the carriage. An additional chamber adjacent the treating chamber accommodates the carriage portion outside the treating chamber to provide conditions for secondary treatment or cooling of the material.

3,584,393
SPLIT DRUM DRYER
Melvin A. Menk, Englewood, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 31, 1969, Ser. No. 872,822
Int. Cl. F26b *11/02*
U.S. Cl. 34—133 **18 Claims**



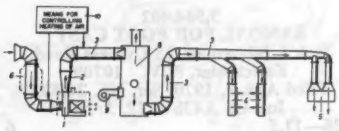
A domestic clothes dryer has a clothes drying enclosure within a cabinet. The clothes drying enclosure is substantially formed by a rotatable horizontal cylindrical drum and the stationary front and back walls of the cabinet whereby to provide increased drying enclosure volume to cabinet volume. A stationary front collar cooperates with the front wall of the cabinet to form pockets for the dryer controls and lint filter and an air exhaust passageway.

3,584,394
TRIANGULAR VANE FOR A SPLIT DRUM DRYER
Frederick M. Grabek, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 31, 1969, Ser. No. 872,903
Int. Cl. F26b *11/02*
U.S. Cl. 34—133 6 Claims



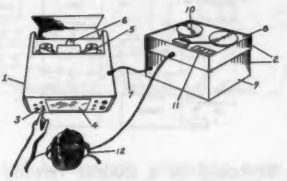
A domestic clothes dryer has a clothes drying enclosure within a cabinet. The clothes drying enclosure for tumbling clothes is substantially formed by a rotatable horizontal cylindrical drum in conjunction with stationary front and back walls of the cabinet. The drum has three triangular-shaped vanes thereon to prevent wedging of the clothes between the ends of the vane and the stationary walls and to prevent balling of the clothes during tumbling.

3,584,395
AUTOMOBILE DRYING PLANT
Armin Peters, 2 Rosenweg, 452 Melle, Germany
Filed Aug. 6, 1968, Ser. No. 750,542
Claims priority, application Germany, Oct. 11, 1967, P 16 30 427.1
Int. Cl. F26b *19/00*
U.S. Cl. 34—229 3 Claims



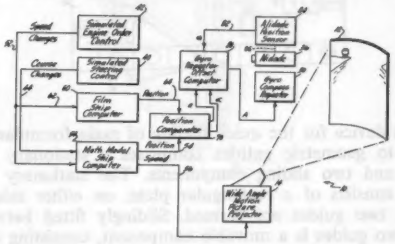
In order to increase the output capacity and to improve the efficiency of stationary or transportable drying plants for washed vehicles of the type using a tunnel or gantry comprising slot nozzles connected to a high-pressure blower of high efficiency and directing the compressed air with high velocity against the vehicle surfaces to be dried, there is provided heat-exchanging means heated with cheap energy, for instance fuel oil by means of an oil burner, and arranged at the discharge side and, if occasion arises also at the suction side of the blower. By controlling the increase of the air temperature at the pressure side of the blower it is possible to maintain a substantially constant dynamic pressure at the slot nozzles at temperatures varying between 20° C. and 150° C. thereby allowing the drying plant to adapt to the momentarily prevailing output requirements. At the same time the noise level of the blower is reduced substantially by providing the heat exchanging means which acts as sound-damping means. In addition the heat-exchanging means may also include noise-damping means or separate muffling means may be provided in addition to the heat exchanging means.

3,584,396
MAGNETIC STEPPING DEVICE
Jack W. Hannah, 1816 Spring Mill Road, Mansfield, Ohio 44903, and Fred W. Willardson, R.D. 8, Lexington, Ohio 44904
Filed Nov. 14, 1968, Ser. No. 775,654
Int. Cl. G09b *5/06*
U.S. Cl. 35—9 4 Claims



A means for controlling a magnetic tape recorder which utilizes a tape having a plurality of messages linearly arranged whereby said control enables a particular message to be quickly and automatically selected and played when actuated by signals from appropriate teaching machines capable of selecting a particular frame to be viewed from a film containing a plurality of frames. The novel control means thus picks a message in an automatic manner, which message is correlated to a frame being viewed.

3,584,397
SHIP PILOTING TRAINER
Albert E. Woodcock, Winter Garden, Fla., assignor to the United States of America as represented by the Secretary of the Navy
Filed Sept. 27, 1968, Ser. No. 763,206
Int. Cl. G09b *9/06*
U.S. Cl. 35—10.2 3 Claims



A ship piloting trainer is disclosed wherein a film depicting landmarks which would be seen upon entering a harbor is projected on a curved screen, a gyro repeater and alidade are disposed at the center of curvature of the screen, and computer means are provided for providing appropriate offsets to the gyro card whereby bearings and fixes will correspond to positions of a math mode ship.

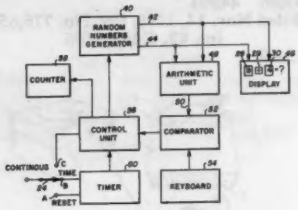
ERRATUM

For Class 35—12 see:
Patent No. 3,584,429

3,584,398
TEACHING DEVICE HAVING MEANS PRODUCING A SELF-GENERATED PROGRAM
Jerome C. Meyer, Los Altos, and James A. Tillotson III, Sunnyvale, Calif., assignors to Hu-Mac, Inc., Mountain View, Calif.
Filed Sept. 29, 1969, Ser. No. 861,604
Int. Cl. G09b *7/02*
U.S. Cl. 35—31 17 Claims

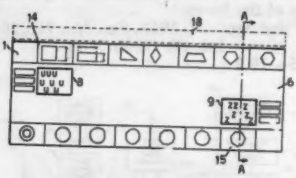
A novel teaching machine having an indicia display means, random signal generator means for actuating said

display means, a keyboard and a means for electronically determining a functional interrelationship between the displayed indicia and comparing it with an input keyed



into the keyboard by a student viewing the display in order to develop the student's skill in evaluating the relationship between the displayed indicia as well as utilizing the keyboard.

3,584,399
DEVICE HAVING A TABLE FITTED WITH TWO SLIDING ELEMENTS, FOR THE QUICK FINDING OF MAIN FORMULAE RELATED TO GEOMETRIC ENTITIES
Giuseppe Iaia, Via della Rotonda 69, Augusta, Siracusa, Italy
Filed June 4, 1969, Ser. No. 830,361
Claims priority, application Italy, June 25, 1968, 130,567
Int. Cl. G09b 1/16
U.S. Cl. 35—34 **2 Claims**

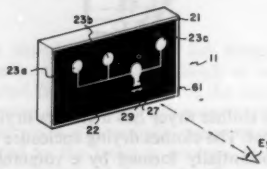


The device for the quick finding of main formulae related to geometric entities comprises a stationary element and two sliding components. The stationary element consists of a rectangular plate, on either side of which two guides are formed. Slidingly fitted between said two guides is a movable component, consisting of a rectangular plate made of an opaque material, and formed with two symmetrically located, quadrangular windows, being the depictions of geometric entities reproduced on both sides of the stationary element, near the upper and lower edges thereof, while the related resolutive formulae are printed or engraved adjacent each depicted geometric entity.

3,584,400
FOLDABLE POLYHEDRONS
Frederick Voges, 733 S. Courtland, Park Ridge, Ill. 60068
Filed Sept. 16, 1968, Ser. No. 759,890
Int. Cl. G09b 27/08
U.S. Cl. 35—46 **5 Claims**

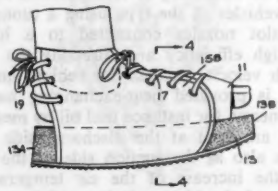
Foldable polyhedrons of the globular type used to represent terrestrial or lunar spheres, blanks for forming these structures and methods for assembling the blanks are disclosed. The assemblage of the die cut blanks result in a foldable inner skeletal section formed of planar panels radiating from a central axis line and extending to the meridian lines of the globe's surface and an outer surface shell composed of abutting, conjugate facets that are secured to the perimetric edge of the adjacent skeletal panel.

3,584,401
EDUCATIONAL DISPLAY DEVICE AND METHOD
William C. Cryer and Lee Vaughn Dively, Tulsa, Okla., assignors to Burtek, Inc., Tulsa, Okla.
Filed July 1, 1969, Ser. No. 842,433
Int. Cl. B43l 1/10; G09f 9/34
U.S. Cl. 35—66 **37 Claims**



An educational display device and method of manufacture are disclosed incorporating a normally dark dead front matte surface of photographic film having multiple selected patterns which are reflectively opaque and translucent to a selected backlight and which are normally frontally visually indistinguishable from adjoining dark opaque background areas when viewed under low level reflected room light suitable for reading and writing and at a distance suitable for classroom instructional purposes. The selected pattern areas are disposed in registry with corresponding selectively illuminatable pattern forming cells secured behind a base panel sheet of rigid translucent light diffusing material.

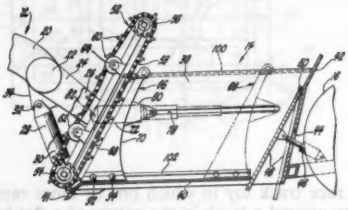
3,584,402
SANDAL FOR FOOT CAST
Jack J. Silverman, 15 Cypress Road, Eastchester, N.Y. 10709
Filed Apr. 8, 1970, Ser. No. 26,539
Int. Cl. A43b 3/12, 3/10
U.S. Cl. 36—11.5 **6 Claims**



A sandal adapted to accommodate a foot encased in a surgical cast. The sandal is of non-bendable construction and is formed by a generally rectangular platform of high-density foam plastic which is laminated to an underlayer of relatively rigid tread material. The forepart of the platform, from a transverse line lying below the ball of the foot and extending to the front edge, is of diminishing thickness to define a wedge facilitating a rocking motion. Interposed between the platform and the tread is a fabric piece having complementary flaps extending from opposite

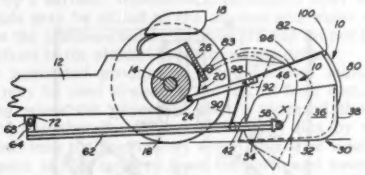
sides of the sandal, the flaps being contoured to define the vamp portion and the ankle cuff portion of a full shoe when the flaps are tied together against the cast.

3,584,403
SELF-LOADING SCRAPER HAVING EJECTOR WHICH MOVES REARWARDLY FOR UNLOADING
Charles R. Copeland, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 15, 1969, Ser. No. 850,354
Int. Cl. B60p *1/36*; E02f *3/62*
U.S. Cl. 37—8 **4 Claims**



A self-loading scraper having the front end of the bowl supporting an elevating device having a plurality of transverse flight members. The ejector is normally positioned adjacent to and slightly to the rear of the elevating device, and in addition to discharging material from the bowl, the ejector serves to cooperate with the flight members for confining and compartmentalizing material as it is being raised by the elevating device into the bowl.

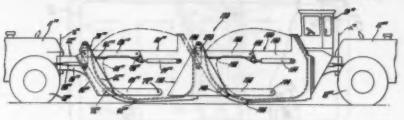
3,584,404
TRACTOR SCOOP
Frank C. Neal, 14 Lincoln St., Cattaraugus, N.Y. 14719
Filed Dec. 27, 1968, Ser. No. 787,364
Int. Cl. E02f *3/62*
U.S. Cl. 37—118 **1 Claim**



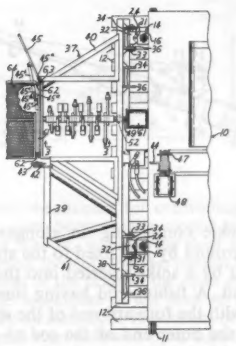
A scoop attachment for a tractor having a frame adapted to be pivotally mounted on the frame of said tractor. A scoop is pivotally mounted on said frame about a generally horizontal axis located about ⅓ of the distance rearwardly from the leading or forward edge of the scoop and about ⅓ of the distance upwardly from the bottom wall. A handle is connected to the scoop for facilitating manipulation of the scoop by hand to perform a variety of operations.

3,584,405
SCRAPER HAVING PLURAL BOWLS
Janis Mazzarins, Macedonia, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 8, 1968, Ser. No. 774,472
Int. Cl. E02f *3/64*
U.S. Cl. 37—127 **3 Claims**

A scraper including a tractor and a trailing bowl wherein the tractor is steerable about a vertical axis relative to the bowl and the latter is supported by a draft assembly for movement between a raised-carry position and a lowered-dig position. The draft assembly includes a support frame having a transversely extending section terminating at each end with a side section which in turn pivotally supports one end of upper and lower substantially parallel and horizontally extending arms located along each side of the trailing bowl. The other ends of the arms are pivotally connected to the side walls of the bowl.



3,584,406
ROTARY SCARIFIER FOR RAILWAY ROADBED
Royce G. Kershaw, Montgomery, Ala., assignor to Kershaw Manufacturing Company, Inc.
Filed Feb. 18, 1969, Ser. No. 800,102
Int. Cl. E01b *27/02*; A01b *33/02*
U.S. Cl. 37—105 **2 Claims**

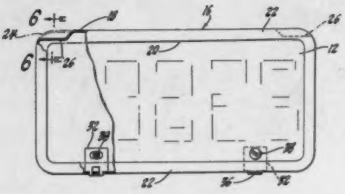


Railroad scarifying apparatus having a supporting frame movable to selected positions and pivotally supporting a tool carrying frame which is movable to lower and elevated positions. A plurality of outwardly projecting tools are carried by a shaft mounted for rotation in a laterally extending tool carrying frame with outer ends of tools curved in direction of rotation to lift and loosen ballast. The length of tools progressively decreases toward outer end of shaft.

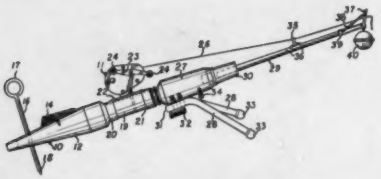
3,584,407
LICENSE PLATE FRAME
Hiram P. Vrooman, Jr., Pontiac, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Dec. 16, 1969, Ser. No. 885,414
Int. Cl. G09f *7/00*
U.S. Cl. 40—209 **3 Claims**

A license plate frame is of generally U-shaped cross section and shaped to receive the license plate. The outer peripheral wall of the frame at two corners is longitudinally lanced and the resulting integral strap portions bent inwardly to overlie the inner surface of the plate and hold the outer surface against the inner peripheral wall of the frame, which is of less depth than the outer wall. Rotatable tabs located generally opposite the bent-in portions can be swung inwardly of the frame and against the

rear surface of the license plate to hold the license plate within the frame. A common fastener extends through the license plate, each tab, and through a conventional vehicle body panel to secure the license plate and frame to each other as a unit and mount the resultant unit on the vehicle body.



3,584,408
FISHING TACKLE
Alexander Frick, G.P.O. Box 26, Flushing, N.Y. 11352
Filed Oct. 21, 1969, Ser. No. 868,184
Int. Cl. A01k *97/12*
U.S. Cl. 43—17 **3 Claims**

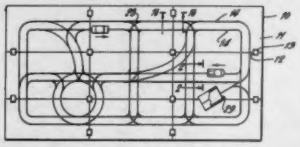


A fishing tackle comprising an elongated stand supported on the ground by legs fixed to the stand intermediate its ends and by a spike inserted into the ground adjacent its rear end. A fishing rod having line guides thereon is engaged with the forward end of the stand and a bell is mounted on the outer end of the rod to signal the bite of a fish. The stand may be used with a reel, in which case the line guides on the rod are extended in the same direction as the reel, or without a reel, wherein the line is secured to the underside of the stand and the guides are extended downwardly.

3,584,409
CREATURE TOY
Wah Ming Chang, Altadena, and George E. Robson, Torrance, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 23, 1968, Ser. No. 786,125
Int. Cl. A63h *33/00*
U.S. Cl. 46—22 **5 Claims**

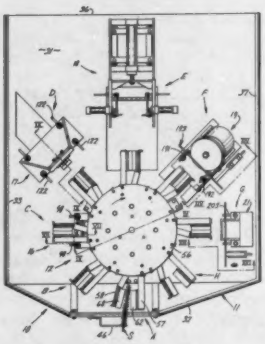
Imaginary monsters which can be assembled by threading pliable creature parts with holes in them, such as a head with a mouth, on an elongated body part, such as one which includes a large tongue or antenna at the front and a tail at the rear. Molds are provided to mold the parts.

3,584,410
RACE TRACK TOY
Guy John Lalonde, 145 Miriam St., Bethpage, N.Y. 11714
Filed Oct. 9, 1969, Ser. No. 865,134
Int. Cl. A63h *33/26*
U.S. Cl. 46—238 **9 Claims**



A race track toy in which one or more racing cars are driven around a track in the nature of a flat board having continuous grooves therein. The cars are shifted from groove to groove at intersections in the grooves by reason of a switching wheel carried at the front of each car. The switching wheel is asymmetric and will direct the car into whichever groove happens to coincide with the disposition of the wheel as it enters the intersection. The operator therefore has no control over the cars in their travel over the board.

3,584,411
CUTTING MAKING MACHINE
Robert J. Broersma, Spring Lake, Mich., assignor to Royer Foundry and Machine Co., Kingston, Pa.
Filed July 22, 1969, Ser. No. 843,396
Int. Cl. A01g *3/00*
U.S. Cl. 47—1 **14 Claims**



An apparatus for preparing nursery cuttings for planting. The apparatus, one embodiment, includes a rotatable clamping structure which is successively indexed to a plurality of stations for permitting both the top and bottom of the cutting to be trimmed, the bottom or stem then being stripped of foliage and wounded. The apparatus then, if desired, applies a hormone solution to the wounded stem after which the prepared cutting is discharged from the apparatus for further handling as desired, such as by being planted in the ground or in a container containing planting media.

3,584,412

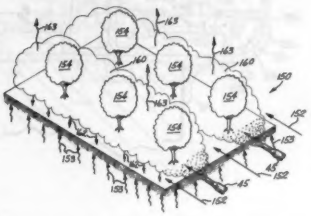
STABLE MIST GENERATION METHOD AND APPARATUS, THE PRODUCTS AND USES THEREOF

Thomas Y. Palmer, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation-in-part of application Ser. No. 362,262, Apr. 24, 1964, now abandoned. This application Nov. 30, 1967, Ser. No. 687,046

Int. Cl. G02b *5/24;* **A01g** *13/06;* **C06d** *3/00*

U.S. Cl. 47—2 **14 Claims**



Disclosed is a series of methods and apparatuses for generating a stable water mist composed of water drops coated with a monomolecular film of long chain fatty alcohols whose carbon atoms are 16 and above. The methods include vaporizing and then condensing the alcohol to form particles of a suitable size for later intimately mixing with and thereby becoming a coating film upon generated drops of water. The water drops may be generated by means of a steam nozzle, spinning disc, or the agitation caused by an ultrasonic generator focused on the surface of a water bath or in the path of a water spray. The size of the drops can be controlled by the size of the generating equipment, temperature and quality of the steam or the intensity of the ultrasonic field. The alcohol particles may be held in solution with a volatile solvent which, after the spray mixing or emulsion of this solution and water drops, erupts causing the alcohol particle to burst out from the water drops to form a coating on the drop's surface. Insecticides, fertilizers, dyes and other materials may be added to the alcohol and water sprays so long as the additives have a neutral pH and do not cause imperfections in the alcohol film around the drop.

The generated product of alcohol-coated minute water drops may be used to reduce the risk of frost damage to an orchard when the generated mist is directed through the orchard and thereby reduces the energy flux by reflecting and absorbing the heat energy which otherwise would escape into space as it is radiated from the earth and trees. The effectiveness of the mist for this purpose is enhanced when the water drops have a radius between 3 and 15 microns. In a similar manner the coated drops can form a floating lens system for reflecting and scattering infrared radiation. Another use of the generated product is to assist in the extinguishment of fires such as forest fires, by permitting a greater amount of water to be used for wetting the fuel of the fire and increasing the relative humidity closer to the fire since the coated water drops are more stable and can penetrate farther into the fire without having the moisture evaporated. Particularly good results occur when the radius of the water drops is between 50 and 100 microns. A dense opaque mist can be used to engulf an unruly mob reducing visibility to such a degree as to cause the mob to become disoriented and easily controlled.

3,584,413

WINDOW CONSTRUCTION

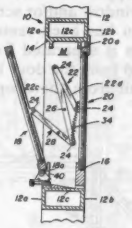
Philip Abrami, 1947 53rd St., Brooklyn, N.Y., and Frank Abrami, 3915 Clark St., Seaford, N.Y.

Filed Mar. 12, 1969, Ser. No. 806,414

Int. Cl. E05c *7/02*

U.S. Cl. 49—65 **6 Claims**

A window construction in the operation of one preferred embodiment of which adjacently located windows are movable between open and closed positions to provide controlled ventilation and wherein window movement occurs in separate phases or sequences which significantly contributes to the efficient and improved functioning of the unit.



3,584,414

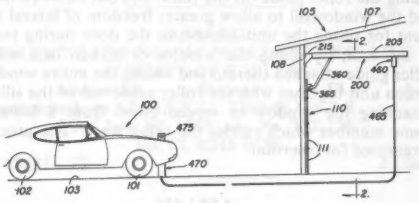
DOOR CONTROL MECHANISM

Erwin B. Bahnsen, Hinsdale, Ill., assignor to Steiner American Corporation, Salt Lake City, Utah

Filed Oct. 29, 1969, Ser. No. 872,118

Int. Cl. E05f *13/00*

U.S. Cl. 49—272 **42 Claims**



A door control mechanism for controlling the movement of a sectional door between the closed position and the opened position thereof, wherein the door is biased toward the closed position thereof, the mechanism accommodating manual movement of the door to the open position followed by an automatic movement of the door to the closed position, followed by an automatic movement of the door to the open position and then followed by a manual movement of the door to the closed position, the mechanism including a continuous carrier partly oriented essentially normal to the opening and shiftable toward and away therefrom, a slide pivotally mounted on the door and movable therewith and engageable on and guided by the carrier, a first latch mechanism having a slide-holding condition for holding the door in its open position and having a slide-releasing condition for permitting movement of the slide and the door to the closed position thereof, a door-driving device connected to the carrier and having an energy-storing condition and a door-driving condition, a second latch mechanism having a door-holding condition for holding the door-driving device in the energy-storing condition thereof and having a door-releasing condition for placing the door-driving device in the door-driving condition thereof, a trigger for selectively operating the first and the second latch mechanisms, and biasing means for selectively rendering the trigger operable to change the condition of only one of the first and the second latch mechanisms at one time.

3,584,415

SEPARABLE WINDOW, SCREEN AND WINDOW-SCREEN UNITS FOR AUTOMOTIVE DOORS AND METHOD OF INSERTION AND REMOVAL OF SAME

Robert D. Keefe, and Alice Keefe, both of 207 Hickory St., Borough of Barnesboro, Pa.

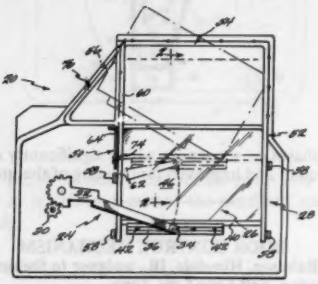
Filed July 29, 1969, Ser. No. 845,843

Int. Cl. E05f *11/38*

U.S. Cl. 49—348 **9 Claims**

Method and assembly for permitting the insertion and/or removal of a door windows, screens or window-screen com-

binations wherein the assembly comprises window and/or screen guide channels with each guide channel having a readily removable upper forward section that permits manipulation of the window and/or screen unit relative to the door after the section has been removed. During removal, the window or screen is separated from its respective drop arm and then removed from the door by either separating the window or screen unit from the drop arm roller guide and



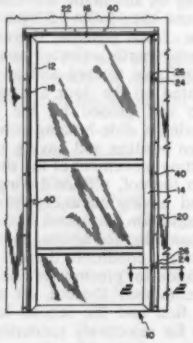
sliding the roller guide off the roller and out between the unit and the windowsill to allow greater freedom of lateral movement for tilting the unit relative to the door during removal of the unit; by tilting the window or screen unit with the roller guide attached thereto and sliding the entire window or screen unit together with the roller guide out of the sill or by detaching the window or screen panel from a lower unit frame member which carries the roller track. The procedure is reversed for insertion.

3,584,416

PREHUNG DOOR MOUNTING MEANS

Raymond H. Baumgartel, Akron, Ohio, assignor to Harvard Industries, Inc.

Filed Feb. 9, 1970, Ser. No. 9,544
Int. Cl. E06b *3/32*
U.S. Cl. 49—380 **6 Claims**



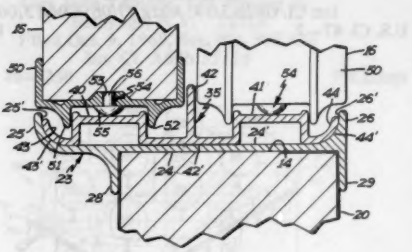
A prehung door and casing assembly, including an improved spacer assembly for temporarily mounting a door within a door jamb frame so that the door frame is spaced a predetermined distance from the door jamb member and so that the door frame and door jamb members may be easily installed in a door opening as a unit. The spacer assembly includes a spacer member having a rectangular base portion and parallel extending portions which serve as spacer elements and define a guide track for a severing tool which is employed to cut a rivet passing through the frame, the door jamb, and the spacer member.

3,584,417

REMOVABLE SLIDING-DOOR TRACK

Robert P. Gatton, and Leroy Schmuck, both of Kendallville, Ind., assignors to Streater Industies, Inc., Albert Lea, Minn.

Filed Mar. 17, 1969, Ser. No. 815,250
Int. Cl. E05d *15/08*
U.S. Cl. 49—404 **2 Claims**



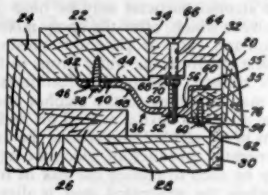
The invention relates to a sliding door track of the type which is mounted on the door sill and functions to both support the weight of and provide longitudinal guidance for sliding doors. The invention resides in providing a two-piece assembly of a track frame which is fixedly mounted on the sill and a track member which is easily removable to facilitate cleaning.

3,584,418

ADJUSTABLE DOOR FRAME

John F. Penkala, Bristol, R.I., assignor to E. W. Lumber Co., Middeboro Rd., East Freetown, Mass.

Filed Oct. 13, 1969, Ser. No. 865,552
Int. Cl. E06b *1/08*
U.S. Cl. 49—505 **5 Claims**



An adjustable doorframe having a fixed or stationary jamb and a movable jamb located for engagement with the striking edge of a door and being adjustable with respect to the fixed jamb to vary the size of the door opening, wherein a proper fit of the door is provided within the frame regardless of the condition of the door in connection with expansion and/or contraction thereof.

3,584,419

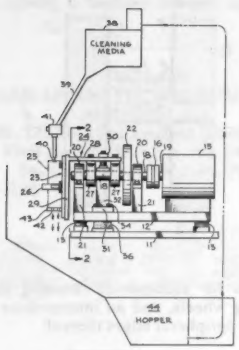
APPARATUS AND METHOD FOR CLEANING HOLLOW CASTINGS

Frank A. Hulet, and Wilmer J. Friesen, both of Hutchinson, Kans., assignors to M. W. Hartmann Manufacturing Co., Inc., Hutchinson, Kans.

Filed Oct. 3, 1969, Ser. No. 863,433
Int. Cl. B24b *19/00*
U.S. Cl. 51—7 **6 Claims**

A rapid method is provided for cleaning out adhering sand particles from a sand-cored metal casting, by passing a continuous stream of hard cleaning granules into and out of the cavity in said casting while simultaneously strongly vibrating the casting and the contained granules therein, said vibration being strong enough to cause the granules to bounce against the walls within the cavity. A vibratory machine having an

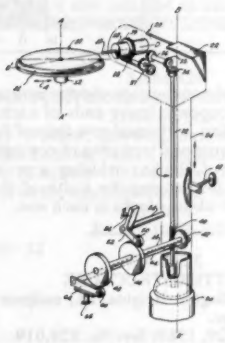
eccentric or offset shaft operated by a horizontal shaft motor is provided, the vibration thereby generated being of a gyratory nature in a plane generally perpendicular to the stream of granules passing into and out of the cavity of the casting.



3,584,420
APPARATUS FOR GRINDING CURVED LIP POINTS ON TWIST DRILLS

John Robert Southland, Arcadia, Calif., assignor to Omark-Winslow Aerospace Tool Co., Portland, Oreg.

Filed Dec. 4, 1968, Ser. No. 781,207
Int. Cl. B24b *3/30*
U.S. Cl. 51—94 **5 Claims**



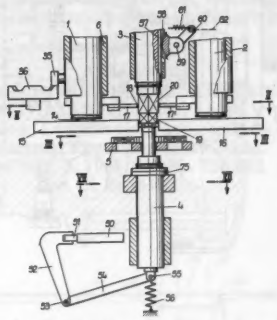
A process and grinding machine for generating a curved lip drill point on a twist drill in which the drill is moved against the surface of a peripheral groove in a grinding wheel. This groove has a profile comprised of an arc and two straight lines tangent to opposite ends thereof. The drill point is repeatedly engaged with this surface.

3,584,421
MARGINAL MACHINING

Ernst Loh, Wetzlar, and Wilhelm Doll, Burgsolms, both of, Germany, assignors to Firma Wilhelm Loh, K. G. Optikmaschinenfabrik, Firma Wilhelm Loh, K.G. Optikmaschinenfabrik

Filed July 29, 1969, Ser. No. 845,848
Claims priority, application Germany, Aug. 6, 1968, P 17 52 922.5
Int. Cl. B24b *7/00, 9/00, 5/00*
U.S. Cl. 51—101R **10 Claims**

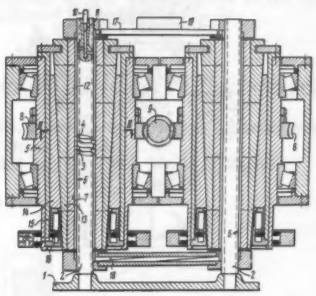
A machine for the marginal machining of small noncircular workpieces by means of grinding wheels in which a workpiece is lifted off a magazine between the ends of two spindles and a master pattern on one of the spindles is traced by a feeler aligned with a grinding wheel in such a way that the wheel grinds the workpiece according to the pattern.



3,584,422
MACHINE FOR PRODUCING CONVEX ROLLING SURFACE OF ROLLERS

Ivan Andreevich Stepanov, Ul. Kommunisticheskaya.12/23,KV.21, Vitebsk, U.S.S.R.

Filed June 14, 1968, Ser. No. 737,226
Int. Cl. B24b *9/00*
U.S. Cl. 51—73 **2 Claims**



A machine for producing a convex rolling surface for rollers. The machine includes a drum having on its outer surface a spiral groove for accommodating rollers being machined. A tool is made hollow and communicates with the drum disposed inside thereof. The tool has an inside surface which is a working surface corresponding to the outer surface of the drum. The tool is pressed against rollers being machine with the aid of a pressing means which is a pneumatic cylinder producing the desired rolling surface for rollers.

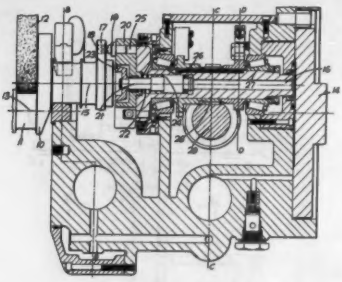
3,584,423
CRANKPIN GRINDER

Stanley William Hoare, Peterborough, England, assignor to The Newell Engineering Company Limited, Peterborough, England

Filed Apr. 14, 1969, Ser. No. 815,874
Int. Cl. B24b *5/42*
U.S. Cl. 51—105 **6 Claims**

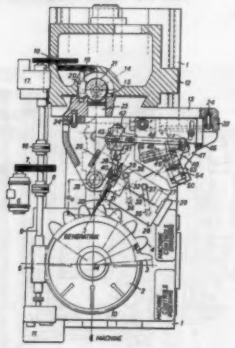
A crankpin grinder in which for controlling the rotary indexing of the workheads a spindle whose angular position

controls the indexing carries two shouldered notches defining end positions spaced by 180°, two pivoted pawls linked by a



spring engage the notches one at a time to determine precisely the angle through which the spindle turns during indexing.

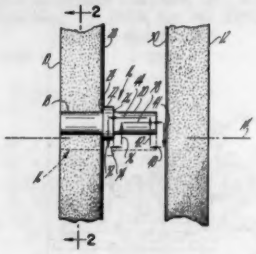
3,584,424
MEANS FOR GENERATING INVOLUTE AND NON-INVOLUTE GEARS
Peter Herbert Cleff, 5 Hartside Place, Melton Park, Gosforth, Newcastle upon Tyne, N 35th, England
Filed Dec. 26, 1967, Ser. No. 693,233
Claims priority, application Great Britain, Jan. 6, 1967, 843/67
Int. Cl. B24b *3/00, 5/00*
U.S. Cl. 51—123 **6 Claims**



A machine for grinding or similarly finishing gear teeth to involute or noninvolute form has an indexable rotary worktable and a column on which is mounted a slide carrying linkage and driving mechanism for controlling and driving a grinding wheel to sweep out a tooth profile in accordance with a given kinematic equation.

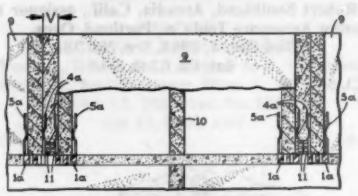
3,584,425
TANGENT ROLL DRESSING FOR TWO AXIALLY SPACED GRINDING WHEELS
Rudolph A. Mattson, Springfield, and Frederick F. Groll, West Springfield, both of, Mass., assignors to Universal American Corporation, Springfield, Mass.
Filed July 2, 1969, Ser. No. 838,617
Int. Cl. B24b *1/00, 53/00*
U.S. Cl. 51—283 **4 Claims**

A conventional pair of left- and right-hand grinding wheels are rotatably supported in a centerless grinder with an axial spacing therebetween dictated by the setup requirements of the workpiece to be ground. A driven roll dresser is movable inwardly in a tangential direction and into tangential contact with an axially extending portion of the left-hand wheel to dress not only that portion of the wheel periphery, but also the peripheral edge of the left-hand wheel which faces the right-hand wheel. The tangential dresser has left- and right-



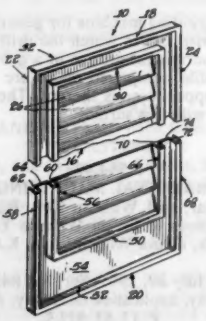
hand end portions for successively dressing the left- and right-hand grinding wheels, and an intermediate portion for dressing the facing peripheral edges thereof.

3,584,426
CLIP FOR POSITIONING CONCRETE BLOCKS
Joseph S. Wargoe, Miami, Fla., assignor to Ograw Products Inc., Miami, Fla.
Filed June 2, 1969, Ser. No. 829,687
Int. Cl. E04c *5/16;* **E04b** *2/06*
U.S. Cl. 52—127 **3 Claims**



A bifurcated and perforated gauge clip for permanent frictional engagement to opposite lower ends of each concrete block placed above a first horizontal row thereof for providing uniform width of horizontal troweling of concrete or mortar between each row of blocks, including a projection on one side of each clip for gauging the width of the vertical troweling between each of the blocks in each row.

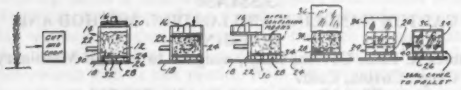
3,584,427
SHUTTER STRUCTURE
Cyril L. Johnston, Arlington Heights, Ill., assignor to Leslie Building Products, Inc.
Filed May 29, 1969, Ser. No. 829,019
Int. Cl. E06b *7/08, 9/02*
U.S. Cl. 52—473 **5 Claims**



An ornamental shutter formed from a thin sheet of plastic material and the like. Margins of the shutter are formed to

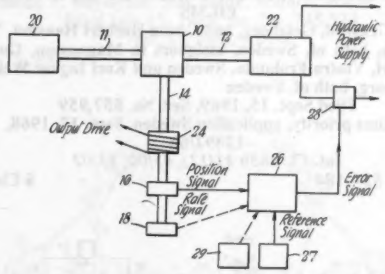
provide a rigidifying frame, and portions of the margin are disposed substantially coplanar with the back of the shutter for abutting a wall or surface so that the shutter may be secured by driving a fastener through such portion to the wall.

3,584,428
METHOD AND APPARATUS FOR PROCESSING SILAGE AND THE LIKE
David C. Falk, 131 26th St., Newport News, Va.
Filed Nov. 8, 1966, Ser. No. 592,867
Int. Cl. B65b *31/04, 1/24, 25/04*
U.S. Cl. 53—22B **3 Claims**



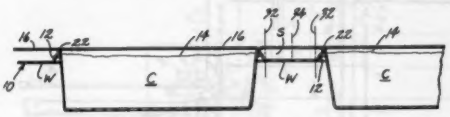
This invention relates to the preparation, handling and storage of silage, haylage, high moisture grain and the like and in particular to a technique for preparing silage and the like in a manner which eliminates the need for storage facilities such as silos and much of the equipment conventionally employed in preparing silage and distributing the same. The technique involves the packaging of silage and the like in self-supporting units which are portable in the sense of being movable by conventional fork lift equipment and the like and which are protected against spoilage by aerobic bacteria. The technique includes the steps of compacting batches of fresh-chopped silage into bale form, preferably on a pallet, and covering and sealing the bale with a protective cover to prevent spoilage. In the preferred embodiment the compaction, palleting and covering are carried out by a mobile machine which is also adapted to cut and chop the crop as the machine moves over a field.

3,584,429
ANGULAR POSITIONING APPARATUS FOR VEHICLE SIMULATOR
Roy Sidney Wadlow, Steyning, Sussex, England, assignor to Link-Miles Limited, Sussex, England
Filed July 18, 1968, Ser. No. 745,898
Claims priority, application Great Britain, July 20, 1967, 33486/67
Int. Cl. G09b *9/08*
U.S. Cl. 35—12 **7 Claims**



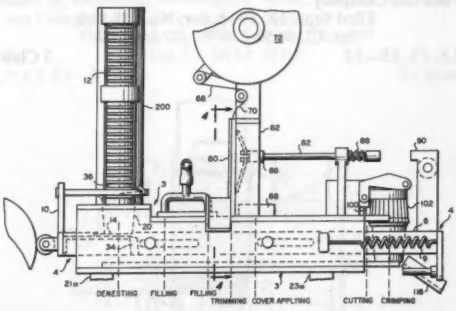
A simulator system comprising a device for simulating a vehicle, a support on which the simulator device is mounted for movement relative to the support, and apparatus for positioning the simulator device with respect to the support. In the positioning apparatus, an output shaft of a differential gear has a load driven thereby. The differential gear has two input shafts normally driven at equal speed so that the output shaft is stationary. The position of the load is changed by temporarily making the input shaft speeds unequal. To control the load position, a signal representing the actual position of the output shaft is obtained and compared with a reference signal representing the desired shaft position to derive an error signal. The speed of one of the input shafts is controlled by the error signal so that the output shaft is driven to adopt a position dependent on the reference signal.

3,584,430
HEAT SEALED THERMOFORMED CONTAINER AND METHOD OF MAKING SAME
Wendell B. Shearer, Longmeadow, Mass., assignor to Package Machinery Company, East Longmeadow, Mass.
Filed Sept. 3, 1968, Ser. No. 756,862
Int. Cl. B65b *47/10*
U.S. Cl. 53—30 **3 Claims**



An open top thermoformed plastic container or package for food stuffs and the like which is formed with a depending rim particularly adapted to receive a snap-on reusable cover to help preserve any unused portion of the contents. When the container is initially formed and filled, a plastic film or sheet is heat-sealed to its open top edge to preserve the contents for what may be a long period before initial or partial use. In the manufacturing and filling process, a plurality of the container bodies or cavities are formed simultaneously in a container sheet and all of them are covered by a single seal sheet or film. Then, the seal sheet is either fully or partially cut around each cavity so that the subsequent punching operation which severs each container from its sheet at its rim will not damage or tear the seal sheet at the container edge and thus destroy the airtight seal.

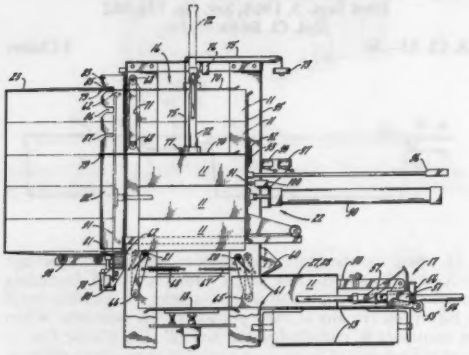
3,584,431
METHOD AND APPARATUS OF FILLING AND SEALING CUPS
John S. Flavelle, Peterborough, Ontario, Canada, assignor to Phillips Petroleum Company
Filed July 24, 1969, Ser. No. 844,482
Int. Cl. B65b *3/04*
U.S. Cl. 53—37 **5 Claims**



Method and apparatus are disclosed wherein a plurality of vertical, supported, nested, rimmed containers are denested individually and sequentially placed on a conveyor means wherein they are reciprocally advanced to a filling station where the container is filled. The containers are subsequently advanced to a cover applying station wherein a cover is heat sealed to the container after being removed from a source and trimmed to the approximate size of the container. Sub-

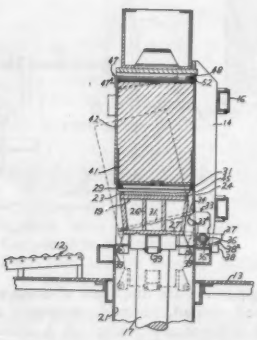
sequently, the covered container is advanced to a cutting and crimping station wherein the remaining covering is cut off and the covering mechanically crimped around the container.

3,584,432
PACKAGING MACHINE
Carl H. Mayer, Jr., 111 Ninth St., Wilmette, Ill.
Filed May 13, 1968, Ser. No. 728,585
Int. Cl. B65b *57/10;, 35/40, 35/50*
U.S. Cl. 53—61 **20 Claims**



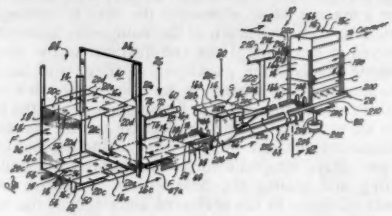
An automatic packaging machine is described for use in packaging operations in which cases of packaged product must be broken open for intermediate operations, such as tax stamping, and then repackaged into their original cases. The present machine is adapted to receive individual open cartons, reseal them, arrange them in stacked rows corresponding to their previous arrangement, and reinsert them into their original case. Operating adjustments are provided to enable the machine to be used interchangeably with packages and cases of varying size.

3,584,433
AUTOMATED BALING PRESS WITH BALE KICK-OUT CARTON HOLDING MEANS AND SEQUENCING CONTROLS
Donald W. Van Doorn; William C. Pease, III, and Jack L. Colquett, all of Columbus, Ga., assignors to Lummus Cotton Gin Company
Filed Sept. 10, 1968, Ser. No. 758,916
Int. Cl. B65b *57/00;, 1/24, 63/02*
U.S. Cl. 53—52 **3 Claims**



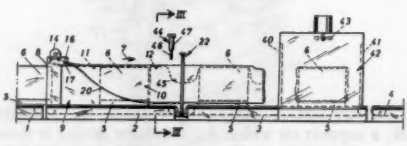
An automated baling press especially adapted for baling fibrous materials and enclosing it in a two part carton such as a kraft board box. The apparatus includes automatic controls to cause the press to move through its several motions such as movement to a position whereby the parts of the carton may be placed in the press box, the charging motion, the compaction stroke, and the holding position for placing ties or other securing means about the bale. The press includes means automatically responsive upon downward movement of the platen to hold the lower part of the carton on the platen for downward travel therewith. Means is provided to hold the upper part of the carton in the box pending closing of the press box doors. An automatic bale ejection means tilts the wrapped bale out the open door upon downward movement of the platen after the bale is tied out.

3,584,434
CARTON HANDLING AND LOADING METHOD AND MACHINE
James R. Ellis, Covina, Calif., assignor to M & E Machinery Corp., Covina, Calif.
Filed May 16, 1968, Ser. No. 729,712
Int. Cl. B65b *35/52, 43/32*
U.S. Cl. 53—159 **6 Claims**



A carton handling and loading method and machine are provided wherein the cartons to be processed are initially folded to a flat condition and then erected into the configuration of a generally tubular carton structure open at its ends, the articles to be packaged are loaded into the carton structure through one of its open ends while its opposite open end is blocked by a removable closure member, the ends of the carton structure are then closed by folding end flaps of the carton across these ends, and the end flaps are finally sealed to provide a completed package.

3,584,435
MACHINE FOR WRAPPING PALLET LOADS IN SHRINK FILMS
Halvor Grasvoll, Goteborg, and Goran Herbert Hansson, Torslanda, both of, Sweden, assignors to Magnusson, Gustav Gilbert, Vastra Frolunda, Sweden and Karl Ingvar Weiner, Goteborg, both of, Sweden
Filed Sept. 15, 1969, Ser. No. 857,959
Claims priority, application Sweden, Sept. 17, 1968, 12492/68
Int. Cl. B65b *41/12;, 45/00, 53/02*
U.S. Cl. 53—184 **6 Claims**



The present invention relates to a machine for wrapping pallet loads in shrinkable sheeting, provided with a gantry having a conveyor travelling therethrough for conveying through the said gantry loads resting on load pallets, a device

for feeding shrinkable sheeting from a supply roll in the longitudinal direction of the conveyor, elements for welding together and severing the shrinkable sheeting material through the welding position and in the longitudinal direction thereof, and with a heated shrinking tunnel with a conveyor for conveying the load covered with shrinkable sheeting, and its associated load pallet, through the shrinking tunnel in order to shrink the sheeting laid about the load. One object of the invention is to provide, in a continuous manner, loads passing through the machine with covers of shrinkable sheeting surrounding the loads and the sides of the pallets in sealing-tight manner such that the pallet is effectively protected from rain. This has been achieved thereby that the shrinkable sheeting feed device supplies the shrinkable sheeting in a sliding manner on a guide arrangement for the shrinkable sheeting which is connected to the gantry and extends in the direction of advance of the conveyor, and that the elements for welding together and severing the web of shrinkable sheeting sliding over this guide arrangement and hanging downwards with its side portion from this arrangement, press against one another the portions of the said web which hang downwards at both sides before the welding and severing operation is carried out.

3,584,436
BLANKET

Stephen Gulyas, Stowmarket, Suffolk, England, assignor to The Lavenham Rug Company, Limited, Suffolk, England

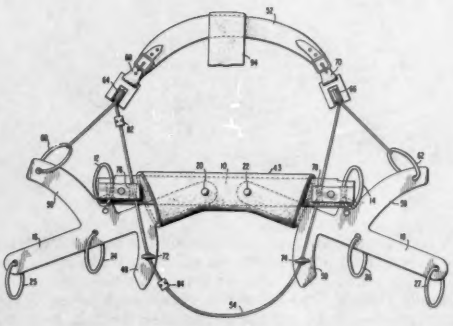
Filed June 5, 1969, Ser. No. 830,730
Claims priority, application Great Britain, June 5, 1968, 26,777/68
Int. Cl. A01k *29/00*; **A68c** *05/00*
U.S. Cl. 54—79 **7 Claims**

A blanket for a horse comprising an outer layer of waterproof fabric, such as nylon; an inner layer of a material having a texture which is such as to cling to the animal's body, such as brushed nylon; and a padding of heat insulating fibre, such as polyester fibre, separating said two layers, the blanket being tailored to fit the animal.

3,584,437
DEVICE FOR CONTROLLING HORSES

Raymond N. Boyington, Star Route, Milford, Maine

Filed July 17, 1968, Ser. No. 745,524
Int. Cl. B68b *01/06*
U.S. Cl. 54—15 **13 Claims**

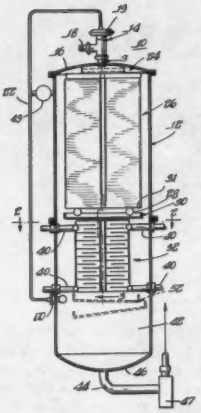


Universal breaking, correcting, and training device for controlling horses permitting selective use of pressure on a horse's nose, lips, bars, and chin. An integral bit structure providing curb bit action or a combination of snaffle bit action and curb bit action is taught. In addition, structure providing selective use of nose strap and chin strap pressures of varying degrees is taught. The selectivity in pressure control areas available helps maintain sensitivity for desired control.

3,584,438
DEAERATOR APPARATUS

Sigmund P. Skoli, Elmwood Park; Chester J. Witt, Deerfield, and Harry G. Mojonnier, River Forest, all of, Ill., assignors to Mojonnier Bros. Co., Chicago, Ill.

Filed June 20, 1968, Ser. No. 738,705
Int. Cl. B01d *19/00*
U.S. Cl. 55—193 **4 Claims**

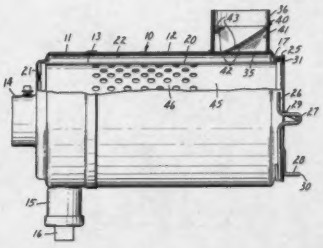


A vacuum deaerator including an evacuated tank having an inlet valve at the top thereof, and outlet at the bottom thereof, and a cooling plate assembly mounted within the tank. Liquid received in the tank is deaerated by exposure to the vacuum in the latter and is cooled by the plate assembly prior to exiting through the outlet of the tank.

3,584,439
FLUID CLEANER

Donald D. Gronholz, Minneapolis, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

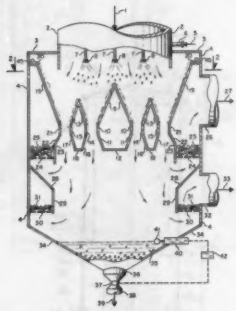
Filed June 20, 1968, Ser. No. 738,467
Int. Cl. B01d *50/00*
U.S. Cl. 55—337 **3 Claims**



A generally cylindrical hollow housing having an inlet and an outlet therein and having a generally cylindrical pervious filter element mounted therein so as to leave a passageway between the pervious filter element and the inner surface of the housing substantially therearound and so that all fluid

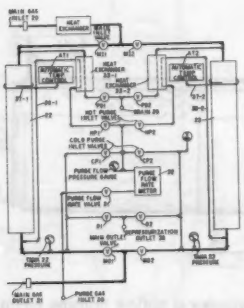
passing through the housing from the inlet to the outlet must pass through the pervious filter element. Vaned means, mounted within the housing inlet, including a plurality of members having a surface formed to direct all fluid entering the inlet into the housing in generally spiral shaped paths around the pervious filter element to produce centrifugal separating action within the housing prior to passage of the fluid through the pervious filter element.

3,584,440
CONCENTRIC ANNULAR VENTURI GAS SCRUBBER
Julio S. Vigil, Middle Village, N.Y., assignor to Chemical Construction Corporation, New York, N.Y.
Filed Mar. 19, 1969, Ser. No. 808,517
Int. Cl. B01d *47/10*
U.S. Cl. 55—219 **18 Claims**



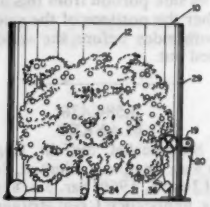
An apparatus is provided for scrubbing an impurity-laden gas stream with a scrubbing liquid such as water to remove impurities from the gas into the liquid phase. The apparatus provides circular concentric or annular venturi passages for the gas-liquid contact, by the provision of a vertical gas scrubbing container in which a central conical baffle, an annular or concentric angular ring-shaped baffle, and an outer inverted frustoconical baffle are coaxially and concentrically disposed, with the apexes of the central baffle and the angular ring-shaped baffle extending upwards, and with the baffles being spaced apart so as to provide two concentric annular venturi-type gas scrubbing passages, so that large volumes of impurity-laden gas may be uniformly scrubbed with low gas pressure drop loss.

3,584,441
GAS PURIFICATION APPARATUS
Walter E. Strimling, 63 Westcliff Road, Weston, Mass.
Filed Jan. 11, 1968, Ser. No. 697,088
Int. Cl. B01d *53/04*
U.S. Cl. 55—162 **6 Claims**



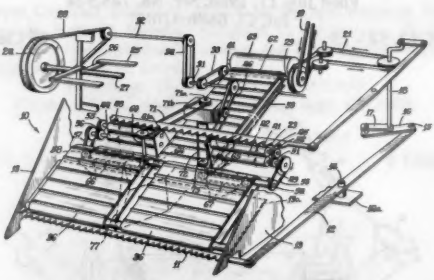
Gas purification apparatus including reactant tanks into opposite ends of which mainstream and purge gases are introduced in a reciprocal operation are equipped with a purge gas heating arrangement for increasing the efficiency of the purge operation and a depressurizing arrangement for reducing the breakdown of reactant granules in these tanks. A simple control circuit in which a timing portion is removable for replacement with a leak test control panel is also described.

3,584,442
METHOD AND APPARATUS FOR PICKING CITRUS FRUIT
Richard S. White, New Canaan, Conn., assignor to AEL Food Automation Inc., Norwalk, Conn.
Continuation of application Ser. No. 633929, Apr. 26, 1967, now abandoned. This application Feb. 18, 1970, Ser. No. 12,901
Int. Cl. A01g *19/08*
U.S. Cl. 56—1 **9 Claims**



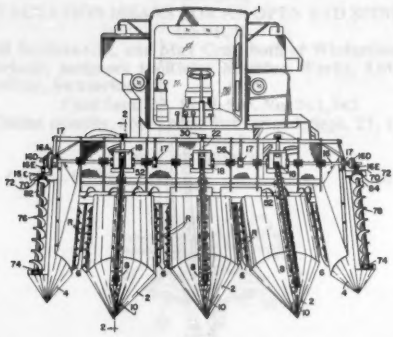
This invention relates to a method and apparatus for picking citrus fruit by submerging the trees temporarily in water. The invention has special application to picking oranges and grapefruit utilizing the buoyancy of the fruit in water and utilizing the water to aid in controlling motion of the tree during picking of the fruit and to provide a buoyant cushion for the fruit itself.

3,584,443
CORN HEADER FOR COMBINES
Shelly A. Bulin, Bettendorf, Iowa, assignor to J. I. Case Company
Continuation-in-part of application Ser. No. 556,373, June 9, 1966, now abandoned. This application Mar. 19, 1969, Ser. No. 808,528
Int. Cl. A01d *45/02*
U.S. Cl. 56—17 **9 Claims**



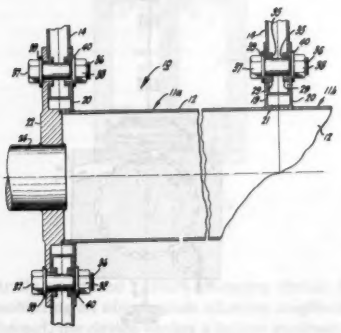
A corn header for combines wherein the combine moving into a corn field acts first to cut the corn stalks and direct them onto a draper roll. The corn stalks are then moved in a generally longitudinal direction into engagement with snapping rolls, which pull the stalks therethrough, snap the corn off and deposit it onto transversely moving gathering chains which direct the corn into a centrally located conveyor which carries the corn into a storage area.

3,584,444
STALK PICKUP APPARATUS FOR HARVESTERS
Ernest F. Sammann, Rte. 4, Box 73, and Walter W. Jackson, Rte. 4, box 102, both of Dimmitt, Tex.
Filed Apr. 30, 1969, Ser. No. 820,478
Int. Cl. A01d *45/02*
U.S. Cl. 56—119 10 Claims



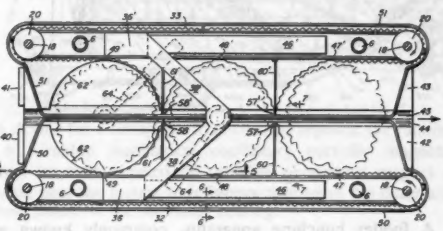
A stalk pickup for a harvester for harvesting ear laden stalks of corn and the like which have fallen. The present stalk pickup is driven from a transverse horizontal shaft and provides for supporting, in cantilever relation, a plurality of conveyor chains having outstanding lugs thereon, with a chain immediately above the respective snouts of the harvester so that the ear bearing stalks will be picked up and engaged between the lower reach of the cantilever supported chain and the upper face of the snout so that the stalk will move upward at a slightly greater speed than the speed at which the harvester moves over the terrain, with the lower reach of each of the chains moving in the opposite direction to the movement of the harvester over the terrain. Spaced apart polygonal discs, having sharp pointed cutting blades on certain corners, are mounted on the horizontal shaft and rotatable therewith, which serve to cut stalks to prevent entanglement of the stalks with the machinery. Spiral conveyors are provided on each outer snout to direct the stalks upward and inward into the harvester.

3,584,445
MODULAR REEL STRUCTURE
Stephen R. Hubbard, Stockton, Calif., assignor to Universal Harvester Co., Inc., Stockton, Calif.
Filed Sept. 5, 1969, Ser. No. 855,560
Int. Cl. A01d *57/02*
U.S. Cl. 56—220 10 Claims



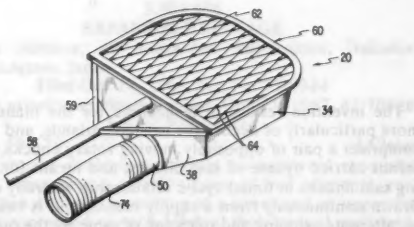
A reel structure of the type used in harvesting machinery to harvest grain and similar grasslike crops, and in cultivating machinery to work or condition the ground. Such reel structure includes an elongated center shaft supported for rotation about the longitudinal axis thereof, and it is equipped at longitudinally spaced locations therealong with drive spiders each of which has radially extending spokes. The spokes of successive spiders are aligned in longitudinally spaced pairs and respectively support rotatable bat assemblies therebetween having fingers that project therefrom to engage the crop or ground as the case may be. The present invention utilizes connector flanges carried by the center shaft and cooperative with the drive spiders in a particular manner to mount the drive spiders upon the center shaft and effect a torque-transmitting interconnection therebetween.

3,584,446
TREE FRUIT CULTIVATING AND HARVESTING SYSTEM
Fritz Bernshausen, 1109 W. G St., Elizabethton, Tenn.
Division of Ser. No. 718,552, Apr. 3, 1968, Pat. No. 3,507,101.
Filed Jan. 30, 1970, Ser. No. 7,027
Int. Cl. A01g *19/00*
U.S. Cl. 56—328 13 Claims



A multiple purpose machine for cultivating and harvesting fruit trees in an orchard is described. The machine is constructed to straddle a row of trees, and performs operations on trees interiorly of the machine as the machine continuously moves along a tree row. The basic machine may be equipped for pruning and hedging, spraying, or harvesting. For harvesting, individual trees are surrounded by containers formed of extended flexible partitioning, the containers are filled with a cushioning material, the trees are shaken to dislodge the fruit therefrom, and a pneumatic conveying system withdraws the cushioning material from the container, allowing the fruit to gently settle on conveyor belts without bruise producing impacts. The cushioning material withdrawn from one container is deposited into a second container formed about a second tree, and as the first container is withdrawn from a harvested tree, a new container is formed around a third tree, so that the harvesting system operates continuously along the row of trees.

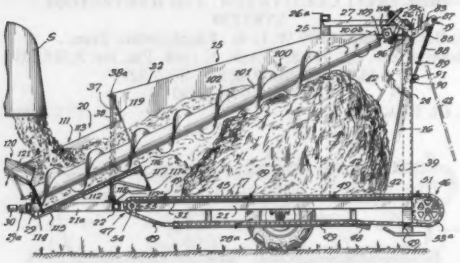
3,584,447
DROP THROUGH CUTTING HEAD AND GATHERING DEVICE
Alton H. Wilson, 7224 Government St., and Douglas E. Ripley, Sr., 675 Wooddale Blvd, Apt. No. 87, both of Baton Rouge, La.
Filed May 6, 1968, Ser. No. 726,921
Int. Cl. A01g *19/08*
U.S. Cl. 56—340 2 Claims



A gathering and severance device for harvesting fruit wherein a basket with an elongated handle has a top portion

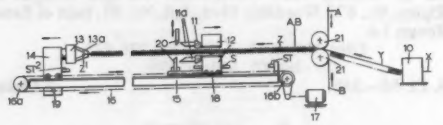
with an overlying open frame cutter having openings to receive the fruit therethrough and severing means, and has conveying means associated therewith whereby the severed fruit is transferred to a collection area.

3,584,448
STRAWBUNCHER
Werner William Martinmaas, Watertown, S. Dak., assignor to Patents, Inc., Hayti, S. Dak.
Filed July 2, 1969, Ser. No. 838,493
Int. Cl. A01d *75/00*
U.S. Cl. 56—473.5 34 Claims



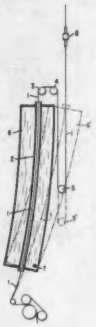
A fodder bunching apparatus, commonly known as a strawbuncher, comprising a wheeled container adapted to be towed behind a harvesting implement to receive animal fodder from the implement as they move about a field. The container has a normally idle apron or ladder type conveyor on its floor to feed collected material out the open rear end of the container intermittently in response to the opening of a barricade which normally closes the rear end; and an infeed auger conveyor receives material from the harvesting implement and scatters it along the container floor where it collects for intermittent discharge.

3,584,449
GARLAND TWISTING MACHINES OR APPARATUS
Geoffrey Pollard, Pool Cottage, Dunham on the Hill, England
Filed June 19, 1969, Ser. No. 834,848
Claims priority, application Great Britain, June 21, 1968, 29622/68
Int. Cl. D01h *3/04*
U.S. Cl. 57—1 6 Claims



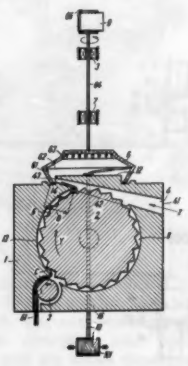
The invention resides in a machine for the manufacture more particularly of decorative twisted garlands, and broadly comprises a pair of oppositely moving rotary chucks, cutting means carried by one of said chucks, and means for operating said chucks in timed cyclic relationship whereby a web is drawn continuously from a supply means, and is twisted, by an alternate gripping and releasing of same by the oppositely moving chucks and is severed by the cutter each time said chucks reach distal positions.

3,584,450
PROCESS AND DEVICE FOR THE MANUFACTURE OF TEXTURED YARNS
Henri Crouzet, Chavonoz, France, assignor to Moulinage Et Retorderie De Chavanoz
Filed Mar. 28, 1969, Ser. No. 811,452
Claims priority, application France, Mar. 29, 1968, 49,839
Int. Cl. D02g *1/02;* D02j *13/00;* D01h *13/28*
U.S. Cl. 57—34 17 Claims



An improvement relating to the environment of producing textured yarns, i.e., stretch or twist curled yarns, by a process involving the setting of a twist during cooling after heating of the yarn, the improvement relating to conducting such setting treatment of the moving yarn by making the yarn follow a lengthened distance comprising a winding or sinuous path between the heat treatment member and a subsequent deformation member i.e. a false twist spindle, to thereby cool the yarn. The device or apparatus necessary to effect such winding or sinuous path of the heated textured yarn comprises a plurality of return means so arranged that the yarn takes the course of at least one loop, preferably a double loop in its path from a heating member to a subsequent deformation member.

3,584,451
FIBER PROCESSING METHOD AND DEVICE
Milan Chrtek, Ceska Trebova; Jaroslav Jires, Dolni Dobrouc; Stanislav Didek, Usti nad Orlici, and Ctibor Doudlebsky, Usti nad Orlici, all of, Czechoslovakia, assignors to Vyzkumny Ustav Bavlnarsky, Usti nad Orlici, Czechoslovakia
Filed Dec. 10, 1969, Ser. No. 883,929
Claims priority application Czechoslovakia, Dec. 13, 1968, 8494/68
Int. Cl. D01h *1/12;* D01g *23/08;* D01b *1/20*
U.S. Cl. 57—58.95 10 Claims



Fibrous sliver is carded for separating it into its constituent fibers. A stream of gaseous fluid is advanced in a predeter-

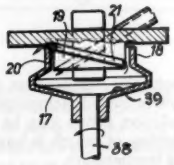
mined path, and the separated fibers are advanced in an other path which intercepts the predetermined path at an acute angle so that the direction of advancement of the fibers entering the predetermined path from the other path is altered at this acute angle in response to engagement of the fibers by the stream of gaseous fluid whereupon the fibers are straightened out and conveyed to a rotary spinning chamber.

3,584,452

EVACUATION MEANS FOR AN OPEN END SPINNING DEVICE

Adolf Schiltknecht, and Max Graf, both of Winterthur, Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed Sept. 23, 1968, Ser. No. 761,742
Claims priority, application Switzerland, Sept. 27, 1967, 13590/67
Int. Cl. D01h *7/00*
U.S. Cl. 57—58.89 **14 Claims**



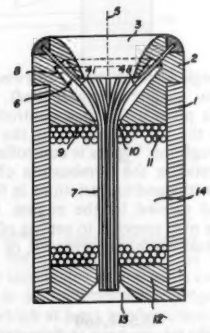
The spinning device has a cover disposed over the rotor to project into the opening of the rotor with a clearance therebetween to permit evacuation of the rotor upon spinning. The cover can be provided with a groove or vane to facilitate the evacuation of the rotor or the rotor can be provided with a flange or blades to facilitate evacuation.

3,584,453

RADIALLY CLAMPING GRIPS

Claude Guignard, Ferney-Voltaire, France; Jean Pellaton, Chatelaine, and Maurice Poull, Meyrin, Switzerland, assignors to Electrospin Corporation, Columbus, Ohio

Filed Jan. 15, 1970, Ser. No. 3,116
Claims priority, application Switzerland, Jan. 16, 1969, 543/69
Int. Cl. D01h *7/00, 13/04*
U.S. Cl. 57—59 **6 Claims**



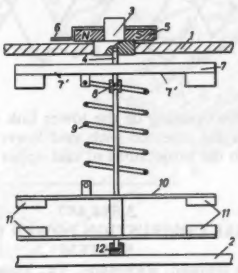
A centrally apertured radially clamping device for angularly immobilizing an object while allowing lengthwise sliding motion thereof, the device having a hollow enclosed cylindrical body containing a plurality of axially extending flexible filaments encircled by a multiplicity of loose pellets substantially filling the cylindrical body.

3,584,454

CLOCK OSCILLATOR REGULATOR

Roland Siefert, Bad Durrheim, and Heinz Odenbach, Irslingen, both of, Germany, assignors to Kienzle Uhrenfabriken G.m.b.H., Schwenningen am Neckar, Germany

Filed Jan. 21, 1969, Ser. No. 792,625
Claims priority, application Switzerland, Jan. 25, 1968, 1165/68
Int. Cl. G04c *3/04*
U.S. Cl. 58—28 **1 Claim**



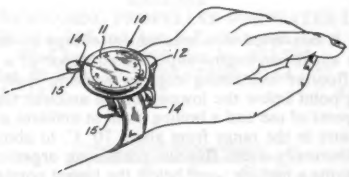
A device for a timepiece to correct or regulate the running of a turnable mechanical oscillatory partially magnetic system wherein a coaxially turnable permanent magnet is located near the system to influence turning of the latter and reduce thrust on the oscillator bearing.

3,584,455

WRIST WATCH CRYSTAL PROTECTOR

Vern F. Sion, 623 E. Providence Ave. Apt. B, Burbank, Calif.

Filed July 29, 1969, Ser. No. 845,737
Int. Cl. G04b *43/00*
U.S. Cl. 58—105 **6 Claims**



A protector for the crystal and mechanism of a wrist watch. The protector may comprise a single piece of substantially transparent material which slidably fits over a watch. A hollow cover encloses the crystal, while a pair of arms resiliently connected to the cover slidably fit beneath the watch band or strap. The protector may be injection molded from clear or transparent plastic material.

3,584,456

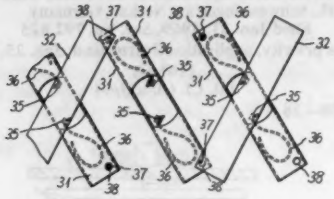
EXPANSIBLE LINKAGE

Tetsuzo Shibuya, 46 Sanchome, Miyakojima, Nakadori, Miyakogima, Japan

Filed Oct. 28, 1968, Ser. No. 770,944
Claims priority, application Japan, Oct. 31, 1967, 42/70028
Int. Cl. F16g *13/24*
U.S. Cl. 59—79 **4 Claims**

The present disclosure provides an improved expansible linkage comprising a plurality pairs of link elements, each pair of link elements consisting of a lower and an upper link element connected to each other at their central portions to form an X-shaped link unit. The lower link element is shaped in the form of a sheath having an opening at the center of its

upper surface. The upper link element has a pair of projections which are located in positions adapted to be freely

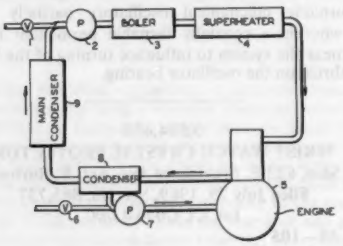


turnable in the opening of the lower link element, and wire spring means are inserted with said lower link element and engaging with the projections of said upper link element.

3,584,457
EXTERNAL COMBUSTION POWER GENERATING SYSTEM

John Gordon Davoud, Richmond, Va., assignor to Edwin Cox Associates, Richmond, Va.

Filed June 2, 1969, Ser. No. 829,590
Int. Cl. F01k *25/06;* **F01b** *31/10*
U.S. Cl. 60—36 **12 Claims**



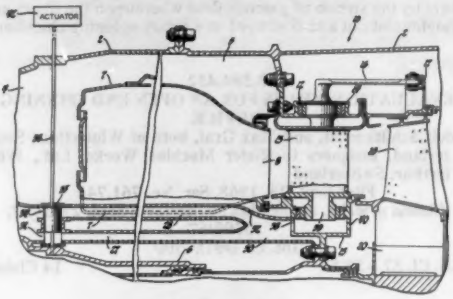
Heat is converted into mechanical energy by introducing into an expansion engine superheated vapor of a thermally stable fluorine containing organic working fluid having a melting point below the lowest normal ambient temperature at the point of use and a boiling point at ambient atmospheric pressure in the range from about 70° C. to about 120° C. and a thermally stable fluorine containing organic lubricant fluid having a melting point below the lowest normal ambient temperature of the point of use and a boiling point at ambient atmospheric pressure substantially higher than the boiling point of the working fluid, condensing the exhaust vapors from the expansion engine, evaporating and superheating the condensed working fluid and returning the superheated vapor to the expansion engine. Lubricant fluid contained in the exhaust from the expansion engine may be separated prior to the condensation of the working fluid and returned to the engine directly or in admixture with the working fluid.

3,584,458
TURBINE COOLING

John M. Wetzler, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 25, 1969, Ser. No. 879,728
Int. Cl. F02c *7/18*
U.S. Cl. 60—39.02 **9 Claims**

A turbine of a gas turbine engine which operates at high temperatures is supplied with cooling air from the compressor of the engine. To reduce flow of cooling air and increase the efficiency of the engine at lower temperatures where less cooling is required, the flow of cooling air is modulated, without reducing pressure, by increasing the temperature of the cooling air. This is accomplished by circulating part of the cooling air in heat exchange relation to the combustion apparatus of the engine and mixing the cooling air taken directly from the compressor with cooling air thus heated as required. Valves to vary the ratio of the two cooling air

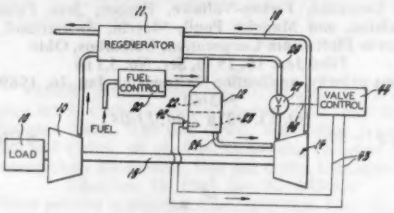


streams may be structurally independent of the turbine and controlled by fuel flow or turbine temperature. Alternatively, the cooling air modulation valves may be part of a variable turbine nozzle the setting of which is varied in accordance with engine operating temperature.

3,584,459
GAS TURBINE ENGINE WITH COMBUSTION CHAMBER BYPASS FOR FUEL-AIR RATIO CONTROL AND TURBINE COOLING

Charles A. Amann, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 12, 1968, Ser. No. 759,324
Int. Cl. F02c *9/02, 9/14, 7/12*
U.S. Cl. 60—39.23 **8 Claims**



A gas turbine engine which may otherwise be of conventional configuration, single or plural shaft, regenerative or nonregenerative, is provided with a controlled bypass from the compressor to the turbine bypassing the combustion apparatus. Flow through this bypass is controlled so as to maintain the fuel-air ratio in the combustion chamber substantially constant notwithstanding variations in fuel flow and airflow with the load carried by the engine. Control of flow through the bypass may respond to setting of the fuel control device, to compressor discharge pressure, or to burner outlet temperature.

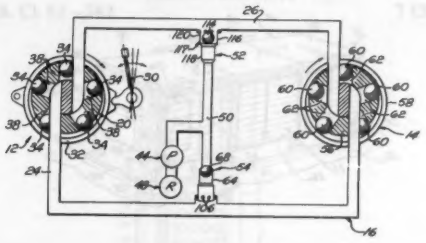
3,584,460
HYDROSTATIC TRANSMISSION

Keith A. Boyd, Mt. Clemens, Mich., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed Feb. 28, 1969, Ser. No. 803,161
Int. Cl. F15b *15/18*
U.S. Cl. 60—53 **17 Claims**

An improved hydrostatic transmission includes a hydraulic pump which is connected with a hydraulic motor by fluid conduits. A makeup pump is connected with these conduits to provide for the maintenance of a minimum fluid pressure

in the conduits by replacing or making up any fluid which is exhausted or lost during operation of the hydrostatic transmission. A pair of pressure responsive valve assemblies control the flow of fluid from the makeup pump to the fluid conduits. To compensate for a transient or short duration decrease in the fluid pressure in one of the conduits, the associated valve assembly discharges fluid from the valve assembly into the conduit while blocking fluid flow from the makeup pump to the conduit. Toward the end of the short duration decrease in pressure, the fluid pressure in the conduit begins to rise back toward the desired minimum pressure and fluid is returned to the valve assembly from the conduit. In this manner a transient or short duration decrease in pressure in the conduit is compensated for without the addition of unnecessary makeup fluid.

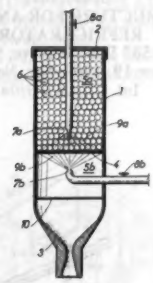


3,584,461

GENERATOR OF HOT GASES USING HYBRID PROPELLANT

Francis Debize, Pessac; Jean-Jacques Henri Dussaut, Lormont, and Rene Theophile Albert Morin, Bordeaux-Cauderan, all of, France, assignors to Societe Europeenne De Propulsion, Puteaux, France

Filed Nov. 24, 1969, Ser. No. 879,099
Claims priority, application France, Nov. 25, 1968, 175,260
Int. Cl. F02k *9/04*; F23r *1/16*
U.S. Cl. 60—251 **10 Claims**



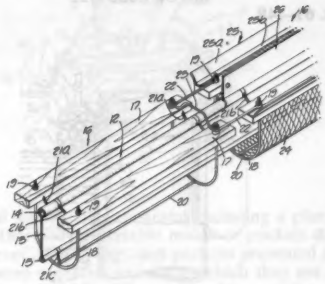
A generator of hot gases employing hybrid propellant, more especially for a rocket-motor, and which includes an enclosure which terminates at one of its ends in a nozzle and in which there is accommodated a propellant in the solid phase and into which at least two injection devices have port, which devices each emit at least one jet of a propellant in the fluid phase able to enter into reaction with the propellant in the solid phase so as to produce a gaseous mass which escapes through the nozzle, wherein the enclosure is divided by a perforated partition or screen, arranged transversely to the general direction of flow of the gaseous mass, into an upstream space remote from the nozzle, in which space the entirety of the solid phase is accommodated in the form of a multitude of fragments, and into an unoccupied downstream space, one of the injection devices, or the primary injection device, having port in the upstream space while the other or secondary injection device has port in the downstream space.

3,584,462

APPARATUS FOR GATHERING AND CLEANING WATER SURFACES OF POLLUTION

Phillip Stephen Gadd, Vancouver, British Columbia, Canada, assignor to Roy F. Gadd, Huntington Park, Calif.

Filed Sept. 12, 1969, Ser. No. 857,357
Int. Cl. E02b *15/04*
U.S. Cl. 61—1 **12 Claims**



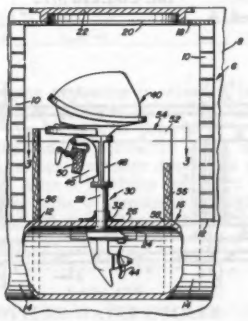
Apparatus for gathering and cleaning water surfaces of pollution, debris, and the like, which comprises an elongated floating boom structure which protectively supports a flexible curtain having float means secured along an upper edge and weight means along a submerged edge, the float means and weight means being connected by slack chains to adjacent portions of the floating boom structure so as to maintain the curtain in an effective operating and working position, and wherein the boom structure mounts protective shielding screens for the curtain, and additionally includes upstanding baffles connectable with float means and/or the floating boom structure. In a modified arrangement, pairs of boom structures support a common curtain therebetween, the curtain being secured along its side edges and being downwardly curved to provide an elongate trough or sluice.

3,584,463

FLOW-INCREASING PROPELLER FOR WATER LINES

Jacob A. Hansen, 208 2nd Ave. N.E., Hampton, Iowa

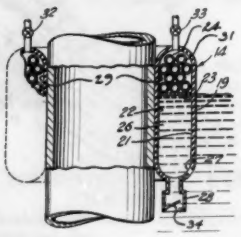
Filed June 12, 1969, Ser. No. 832,790
Int. Cl. E02b *3/02*; F04d *25/00*; F15d *1/02*
U.S. Cl. 61—11 **5 Claims**



A power-driven screw propeller is operatively mounted in a conduit, a drain tile for example. An outboard motor is brought into play and is supportively installed at the bottom of an earth-embedded pit and is accessible by way of a covered manhole at the top of the pit. A boxlike well is built within the bottom part of the pit and the drain tile is passed through openings provided therefore in the pit and well. The usual self-contained transom brackets are hung from a horizontal brace. The conduit is provided with an entrance

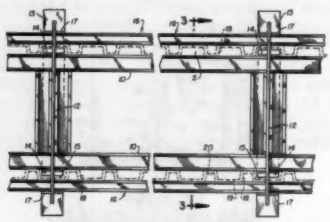
hole for the bladed propeller and a caplike plate covers the hole and is attached to and carried by the insertable and removable outboard motor.

3,584,464
INFLATABLE MARINE FENDER
Fuad T. Saadeh, and Ivo C. Pogonowski, both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.
Filed June 27, 1969, Ser. No. 837,066
Int. Cl. E02b 3/22
U.S. Cl. 61—48 7 Claims



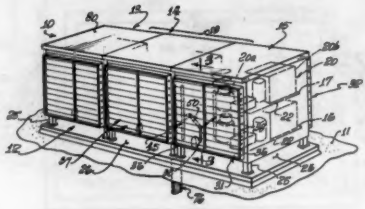
The invention relates to an inflatable fender for a marine structure, being so carried on the latter to receive and absorb the shock of a floating vessel or other object as the latter makes contact with the structure. The fender includes a shock-absorbing element adapted to not only absorb the impact of the floating body but to dissipate the force of the impact and recover for a subsequent impact. A second, supporting element includes an inflatable belt of sufficient length to surround a platform support leg. The support element includes an expandable wall which, upon inflation, extends laterally to form an annular, tight grip against the outer surface of the support leg. Thereafter with the fender supported in place, the shock-absorbing element can be provided for as needed.

3,584,465
EARTH-SHORING APPARATUS
Edward J. Holl, 320 Warwick Ave., South Orange, N.J.
Filed Nov. 17, 1969, Ser. No. 877,176
Int. Cl. E21d 5/12
U.S. Cl. 61—41A 9 Claims



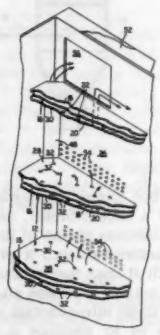
A rectangular, bracing frame, disposed horizontally at ground level, serves with separate rigid guide members, at opposite sides of the frame, to guide sheeting members being driven vertically into the ground at margins of an excavation to be made. After driving of the sheeting members, the frame serves as means or parts of means for holding the sheeting members against dislodgement inwardly of the excavation.

3,584,466
REFRIGERATOR-COMPRESSOR SYSTEM WITH WET WEATHER ADJUSTMENT
Arnold S. Kaufman, and Albert Sweet, both of Los Angles, Calif., assignors to Elsters, Hollywood, Calif.
Filed Apr. 1, 1969, Ser. No. 811,855
Int. Cl. F25b 39/04
U.S. Cl. 62—183 6 Claims



A refrigerator-compressor system comprised of several independent refrigerator compressor units housed within a common outdoor housing, and connected to remotely located refrigerator cabinets or rooms by means of hot and cold refrigerant circulation lines. The refrigerator-compressor system automatically adjusts to cold outdoor temperatures, so that low-temperature malfunctioning is avoided. The separate refrigerator-compressor units, being independently responsive to different refrigerator cabinet conditions, will almost always have at least one refrigerator-compressor unit operating and supplying heat to the interior of the housing. This heat is dissipated to the outdoors by air circulating from beneath and through side louvres, except when the temperature drops sufficiently low to cause refrigerator-compressor operating problems. At low temperatures, a motor responsive to outdoor temperature closes the side louvres of the housing and the heat produced by operation of any one of the several refrigerator-compressor units serves to warm all the nonoperating units, so that they are ready to go into immediate operation when refrigeration demand is made upon them.

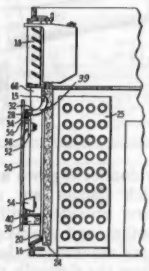
3,584,467
COOKING STRUCTURE FOR AN OPEN ACCESS REFRIGERATOR
Louis F. Barroero, 1585 Daniels Drive, San Leandro, Calif.
Filed June 19, 1969, Ser. No. 834,627
Int. Cl. A47f 3/04
U.S. Cl. 62—252 2 Claims



An open-access refrigerator has a plurality of shelves, each having upper and lower compartments. Means are included for circulating refrigerated air upwardly from the upper compartment of each shelf, over products on the shelf, and into the lower compartment of the shelf directly above it. Means are also included for circulating refrigerated air upwardly

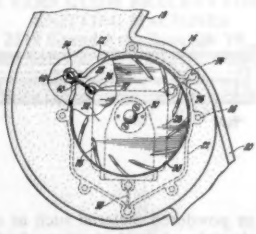
and rearwardly from the upper compartment of each shelf, rearward of the open front of the refrigerator.

3,584,468
AIR CONDITIONER
Wilford P. Crise, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 7, 1969, Ser. No. 822,448
Int. Cl. F25d *23/12*
U.S. Cl. 62—262 **7 Claims**



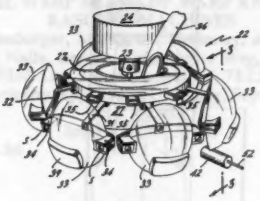
A front assembly for a room air conditioner includes a peripheral rectangular frame providing support structure which yieldably carries a decorative panel coextensive with that portion of the frame defining the openings for the control panel and air filter of the evaporator within the air conditioner, the support structure providing track means for guiding follower means on the panel for sideways movement of the panel to permit access to the controls, the track means also yielding to release the follower means for forward removal of the panel from the front assembly, the track means and follower means supporting the panel forwardly of the rectangular frame thereby providing an annular gap therebetween for airflow to the evaporator.

3,584,469
RESILIENT MOUNTING AND SUPPORT FOR ELECTRIC MOTORS AND THE LIKE
Mervin R. Butts, West Milton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 24, 1969, Ser. No. 879,123
Int. Cl. F25d *19/00*
U.S. Cl. 62—295 **5 Claims**



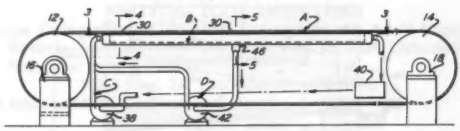
The invention pertains to a resilient mounting used to mount electric motors in a motor housing on refrigeration units. The motor housing includes a plurality of spaced-apart recesses or openings on the periphery of the inner surface or face, while the electric motor includes a plurality of complementary spaced lugs also having recesses or openings formed therein, the motor and motor housing recesses when in the assembled position being opposite each other. Isolators formed of a rubber or rubberlike material fit into the complementary recesses on the motor housing and recesses in the lugs on the motor to yieldably and resiliently support the motor within the housing.

3,584,470
CENTRIFUGAL ICE MAKER
Elmer W. Zearfoss, Jr., Philadelphia, Pa., assignor to Philco-Ford Corporation, Philadelphia, Pa.
Filed June 26, 1969, Ser. No. 836,793
Int. Cl. F25c *1/10*
U.S. Cl. 62—353 **9 Claims**



Centrifugal ice freezing apparatus including a plurality of flexible or otherwise deformable molds or pockets disposed in circular array, and having open portions presented radially inwardly toward a central axis about which they are rotatable. Means is provided for filling the pockets, and for rotating them to retain water therein by centrifugal force. While rotating, the molds are flexed and pivoted to ice freezing position, and are subjected to below freezing temperatures until the water is frozen. Upon freezing of the water, rotation is halted to accommodate both flexing and pivoting of the molds to ice ejecting position. An extensible and retractible mold striker is movable into extended position in which it is impacted sequentially by the pivoted molds to facilitate release of the ice from the molds.

3,584,471
CONTINUOUS FREEZING APPARATUS INCLUDING COOLING PLATEN
Harold R. Powell, King of Prussia, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.
Filed Aug. 15, 1969, Ser. No. 850,589
Int. Cl. F25d *25/04*
U.S. Cl. 62—380 **10 Claims**

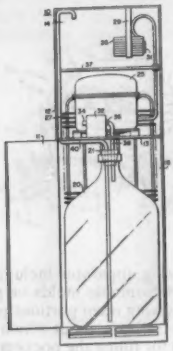


Continuous freezing apparatus in which a heat transfer cooling platen is supported under an endless freezing belt. A primary brine of low viscosity is pumped in a closed loop through the platen, and a secondary brine is circulated through the platen in heat exchange disposition with the primary brine circuit. After it has been cooled by the primary brine, the secondary brine is percolated through the platen into sealing contact with the belt and returned for recirculation in an open loop.

3,584,472
BOTTLED-WATER COOLER
Carl E. Sholtes, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 27, 1969, Ser. No. 828,264
Int. Cl. B67d *5/62*
U.S. Cl. 62—394 **8 Claims**

A bottled-water cooler enclosed in a cabinet containing a replaceable water container in a lower compartment, a refrigerator unit and an electrically actuated air pump in an upper compartment. The pump pressurizes the air in the container to force the water therein to an elevated reservoir in the upper compartment. The reservoir is separated into two

tanks by a partition wall having an aperture therein providing fluid communication between the tanks. The air pump is actuated by a float in one tank sensing the level of water therein, the water from the container being initially delivered to this tank. Refrigeration coils are disposed within the other



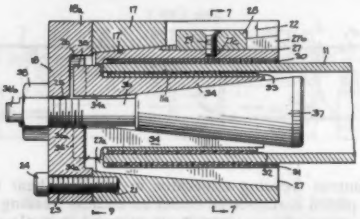
tank to cool the water therein to a predetermined temperature. Each tank is equipped with a gravity flow valve faucet for dispensing the water therein under the influence of the head of water developed in the tanks and at their respective temperatures.

3,584,473

FORCE-TRANSMITTING SYSTEMS

Donald C. MacDonald, Ridgewood, and Edgar Francois, Wayne, both of, N.J., assignors to Uniroyal, Inc., New York, N.Y.

Filed Nov. 19, 1969, Ser. No. 878,048
Int. Cl. F16c *1/02*
U.S. Cl. 64—2 **32 Claims**



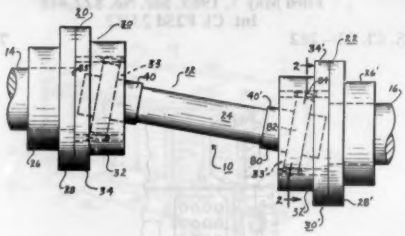
A force-transmitting system including a cylindrical fiber-reinforced resin tube to which stress is transferred simultaneously via both the outside and inside surfaces of the tube, is disclosed. The system utilizes a drivable fitting which includes an external radially contractable circumferential arrangement of axially extending elongated wedge elements within a rigid conically bored coupling sleeve and an either internal radially expansible circumferential arrangement of elongated axially extending wedge elements or an internal rigid and nondeformable cylinder, defining between the outer and the inner structures an annular cylindrical space in which one end region of the tube wall can be received and radially clamped. Distribution of stress transfer over the entire expanse of the clamped portion of the tube is provided for by means of a pair of substantially coextensive, circumferentially continuous, uniform thickness layers of elastomeric material bonded to the outside and inside tube surfaces, respectively.

3,584,474

SPINDLE COUPLING

Robert M. Church, 126 Knox Drive, West Lafayette, Ind.

Filed Sept. 2, 1969, Ser. No. 854,517
Int. Cl. F16d *3/18*
U.S. Cl. 64—9 **12 Claims**



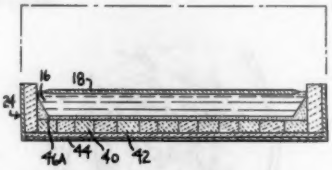
A spindle coupling for connecting two unaligned shafts in driving relation in which flanges are mounted on the unaligned shafts and are provided with sleeves having openings facing one another and grooves on the internal walls thereof. Carriages are mounted in the grooves and are held in spaced relation from the sidewalls thereof by bearing races to facilitate easy movement of the carriages in the respective grooves. A spindle shaft interconnects the two flanges and contains radial members at each end having teeth thereon for engaging the reciprocating carriages in driving relationship.

3,584,475

FLOAT GLASS TANK WITH A PARTICULATE BOTTOM COVERING

William F. Galey, Saxonburg, and John E. Sensi, Arnold, both of, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 680,155, Nov. 2, 1967, now abandoned, which is a continuation-in-part of application Ser. No. 630,914, Apr. 4, 1967, now abandoned, and a continuation-in-part of 787,488, Dec. 27, 1968, now abandoned, which is a division of application Ser. No. 680,153, Nov. 2, 1967, now abandoned, which is a continuation-in-part of application Ser. No. 630,914, Apr. 14, 1967, now abandoned. This application Mar. 26, 1969, Ser. No. 810,517
Int. Cl. C03b *18/02*
U.S. Cl. 65—24 **8 Claims**



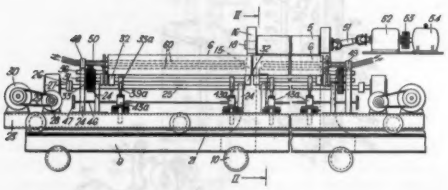
A granular or powdered material such as carbon or graphite, is poured or placed on the bottom of a float bath tank constructed of refractory blocks and the tank is filled with a liquid of a density greater than glass, such as molten tin, which liquid supports glass during the manufacture of float glass. The granules or particles which have a density less than that of the molten tin, prevent sticking of hot glass to the bottom blocks of the tank when occasional glass-to-bottom contact is made. The sides of the tank may also be so covered with the material as to eliminate adherence of the ribbon thereto. In lieu of carbon or graphite, other particulate materials may be used, such as silicon carbide, silica, alumina, boron nitride, titanium nitride, titania, zirconia, zirconium silicate, clay refractories and various mixtures of such materials with or without carbon or graphite.

3,584,476

MOUNTINGS FOR INTERCHANGEABLE CASTING ROLLS OF A GLASS SHEET FORMING APPARATUS

Hubert Cecil Wynne, and David Jones, both of St. Helens, England, assignors to Pilkington Brothers Limited, Liverpool, Lancashire, England

Filed Jan. 3, 1969, Ser. No. 788,724
Claims priority, application Great Britain, Jan. 5, 1968, 879/68
Int. Cl. C03b *13/16*
U.S. Cl. 65—172 8 Claims



A mounting for two interchangeable lower casting rolls for use in a casting unit for producing rolled glass, includes a casting roll carriage on which may be mounted two lower rolls in axial alignment, the carriage being movable across the path of the glass to be rolled to move one lower casting roll out of and to move the other lower casting roll into the casting position.

3,584,477

FLOAT GLASS TANK CONSTRUCTION

Robert M. Hainsfurther, Pittsburgh, Pa., assignor to PPG Industries, Inc.

Filed Dec. 20, 1967, Ser. No. 692,232
Int. Cl. C03b *18/02*
U.S. Cl. 65—182R 1 Claim

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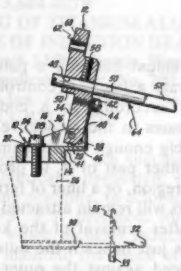
In the construction of a float bath tank to contain the molten bath, the bottom blocks are drilled to provide openings each to receive a threaded stud, which in turn receives a washer and nut so as to retain the bottom blocks in position. The opening is filled at least partially with powdered graphite, the graphite in the opening terminating at the level of the top of the block at the bottom of the bath. A clay refractory ramming mix may also be used to fill in a portion of the opening below the powdered graphite.

3,584,478

PIVOTABLE YARN GUIDE BRACKET FOR CIRCULAR KNITTING MACHINES

Morris Philip, 2519 Grand Ave., Bronx, N.Y.

Filed Nov. 26, 1969, Ser. No. 880,081
Int. Cl. D04b *15/54*
U.S. Cl. 66—19 7 Claims



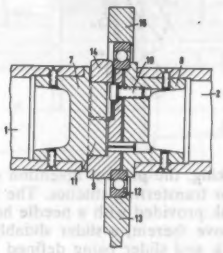
A yarn guide bracket comprising a rear mounting member mountable on the cam carrier of a knitting machine, and a forward yarn guide supporting member pivotably secured to the mounting member for vertical angular movement between a horizontal operative position and an upright inoperative position, the pivotable member being kept in position by means of a leaf spring.

3,584,479

COUPLING FOR THE BEARING SHAFTS OF SECTIONAL WARP BEAMS OF WARP KNITTING AND RASCHEL MACHINES

Arno Zwingenberger, Marxgrun, Germany, assignor to Karl Liebrandt, Naila, Bayern, Griesbacher Weg, Germany

Filed Aug. 15, 1968, Ser. No. 752,938
Claims priority, application Germany, Sept. 13, 1967, P 16 35 839.7
Int. Cl. D04b *23/00*
U.S. Cl. 66—86 2 Claims



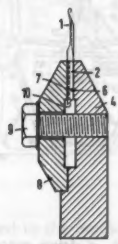
Warp knitting machines of large working width are often provided with sectional warp beams, the bearing shaft sections of which are connected by couplings permanently journaled in the machine frame. Heretofore, considerable gaps occurred between adjacent sectional beams resulting in disturbing effects on the yarn feed. The invention provides a very narrow coupling rigidly attached to a shaft section, which considerably reduces the distance between adjacent sectional beams.

3,584,480

KNITTING TOOL MOUNTING

Arno Zwingenberger, Marxgrun, Bavaria, and Adolf Hagel, Bavaria, both of, Germany, assignors to Karl Liebrandt, Naila, Bavaria, Germany

Filed Mar. 24, 1969, Ser. No. 809,565
Claims priority, application Germany, Apr. 9, 1968, P 17 60 139.7
Int. Cl. D04b *15/00, 35/00*
U.S. Cl. 66—114 5 Claims



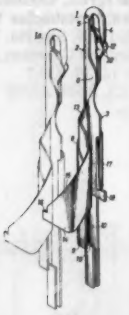
A knitting tool mounting is provided with a needle having a straight shank but no special foot useful both as a single and a multiple needle mount. The needle shank and lengthwise bed groove have registrable transverse grooves lockable with a key inserted through the transverse grooves. The lower end of the needle shank is cut off obliquely.

3,584,481

KNITTING NEEDLE FOR TRANSFERRING STITCHES

Teihichi Hayashi, Aichi, Japan, assignor to Teihichi Kayashi and Uraaki Statake, Aichi, Japan

Filed Dec. 9, 1969, Ser. No. 883,479
Claims priority, application Japan, Mar. 6, 1969, 44/17807
Int. Cl. D04b 35/06
U.S. Cl. 66—120 5 Claims



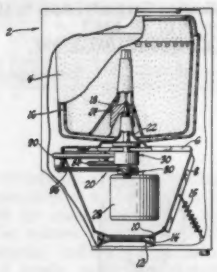
Generally speaking, the present invention contemplates a knitting needle for transferring stitches. The knitting needle has a needle shank provided with a needle hook at one end and having a groove therein, a slider slidably fitted in said groove, said shank and slider being defined by steel sheets bent in U-shaped cross section. The needle shank has an enlarged groove at one portion with a sidewall extending outward, the slider being correspondingly formed with an enlarged groove to fit the enlarged groove of the needle shank. A loop expanding wing V-shaped in cross section extends sideways from the sidewall of said enlarged groove around the front portion of an adjacent knitting needle.

3,584,482

CLOTHES WASHER HAVING AN OSCILLATING AND SPINNING DRIVE MECHANISM

Bryron L. Brucken, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 11, 1969, Ser. No. 798,298
Int. Cl. D06f 23/04
U.S. Cl. 68—23 1 Claim



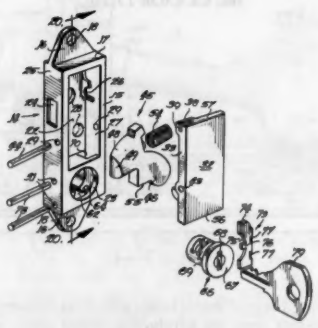
In the preferred form, a drive mechanism for a washing machine having an integral spin tub and agitator, wherein a reversible motor is utilized to rotate a driven spin roller through a friction drive and to oscillate a slider crank drum through an improved slider crank drive, and wherein a clutch mechanism is utilized upon the direction of rotation of the reversible motor to selectively impart to the integral spin tub and agitator the oscillatory motion of the slider crank drum during a washing cycle and the rotary motion of the driven spin roller during a spin cycle.

3,584,483

FLUSH MOUNT PANEL LOCK

John L. Orr, Rockford, assignor to Keystone Consolidated Industries, Inc., Peoria, Ill.

Filed Oct. 16, 1969, Ser. No. 867,027
Int. Cl. E05b 5/00, 65/02; E05c 3/22
U.S. Cl. 70—81 14 Claims



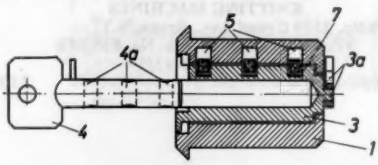
A lock assembly for the door of a cabinet or other enclosure where a lock housing is mounted in the door panel having an opening exposing an actuating face on the housing that is flush with the exterior surface of the door panel. The actuating face includes a pivoted pull and a rotatable lock plug actuating a reciprocable bolt to prevent pivotal movement of the pull. The pull has a depending arm engaging an actuating surface of a pivotally mounted latch bolt spring-biased to latching position. The latch bolt has a radially developed bevel on the strike engaging camming surface normally projecting through a side of the lock housing.

3,584,484

MAGNETIC LOCK

Hermann Hallmann, and Horst Willach, both of Ruppichteroth, Germany, assignors to Huwil-Werke, Hugo Wallach & Sohne, Bezirk Cologne, Germany

Filed Nov. 15, 1967, Ser. No. 683,309
Claims priority, application Germany, Nov. 19, 1966, Sept. 21, 1967, 61034 IC/68a;63957 IC/68a
Int. Cl. E05b 27/00, 47/00
U.S. Cl. 70—276 15 Claims

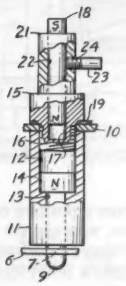


Relative movement between a pair of elements, one of which can operate a latch, is controlled by magnetic tumblers, arranged according to a code. The tumblers are retained in recesses in the respective elements, one of the recesses being big enough to accommodate the entire tumblers, and the other part of it, to provide for coupling; the recesses have a region, or a liner of ferromagnetic material so that the tumblers will remain attracted thereto and hold their position even after removal of the key. The recess of the outer element is just beneath the outer surfaces thereof, so that a key, placed against the outer surface, for example against a face of a cylindrical area, will effect locking (or unlocking) action, the lock being completely sealed to the outside, and a keyslot being avoided.

3,584,485
MAGNETIC LOCK AND KEY

Oliver A. Peterson, Honolulu, Hawaii, assignor to Joe F. Rogers, Honolulu, Hawaii, a part interest

Filed Aug. 12, 1969, Ser. No. 849,386
Int. Cl. E05b *47/00, 63/02, 65/52*
U.S. Cl. 70—276 5 Claims

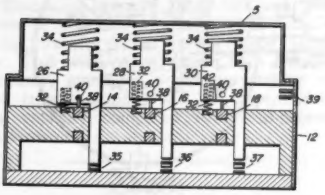


The invention is for an electric lock wherein a magnetic bolt is worked by a magnetic key and the key is designed to work the bolt only when inserted with the proper polarity.

3,584,486
ELECTRONIC LOCK AND SECURITY SYSTEM

Lucien H. Trip, Baltimore, and Michael J. Nusca, Ellicott City, both of, Md., assignors to Trius Corporation, Ellicott City, Md.

Filed Nov. 14, 1969, Ser. No. 876,668
Int. Cl. E05b *49/04*
U.S. Cl. 70—278 14 Claims



A combination code board retains latched-in circuitry as initially set up by the first operation of same. Thereafter, this code will release a door lock whenever the combination is worked. The lock combination can be canceled by electric control.

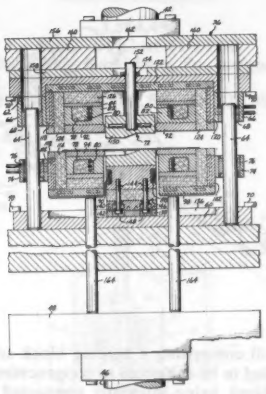
3,584,487
PRECISION FORMING OF TITANIUM ALOYS AND THE LIKE BY USE OF INDUCTION HEATING

Arne H. Carlson, 5534 South 119th, Seattle, Wash.

Continuation-in-part of application Ser. No. 702,700, Feb. 2, 1968. This application Jan. 16, 1969, Ser. No. 791,553
Int. Cl. B21d *37/16*
U.S. Cl. 72—38 26 Claims

Titanium alloy blanks or the like are successively coated with a high-temperature lubricant; preheated, e.g. in a preheat oven or in the forming machine, to a forming temperature (about 1000 —1775° F.); precision formed into a desired shape in a press which includes inductively heated forming tools, serving to maintain the metal at the forming temperature throughout the forming operation; and slowly cooled, e.g. first in a postheat oven down to a lower elevated temperature (e.g. about 600° F.) and then down to ambient temperature under cover of an asbestos blanket or the like.

The heat-forming tools include a fixed die, a movable die and a movable clamping pad. The movable tools are mounted for precision movement by leader pins and bushings. Insulation and water jackets are interposed between the heated tools and the leader pins and bushings to

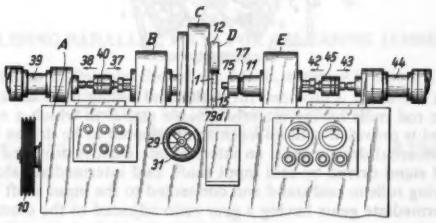


prevent harmful heating of the latter. The forming tools comprise water-cooled tubular conductors embedded in insulative material which in turn is embedded in die parts of long life metals on which the forming surfaces are machined or embedded in supporting cores therefor.

3,584,488
METHOD OF AND MACHINE TOOL FOR ROLLING THE TOOTHING OF GEARS INTO A CROWNED SHAPE

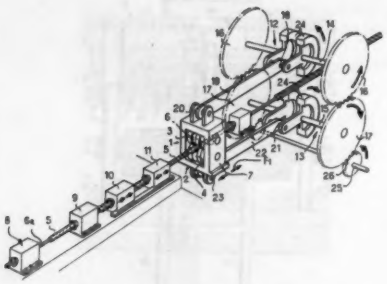
Frank F. Erdelyi, 313 Foxhall St., Raleigh, N.C.

Filed Jan. 28, 1969, Ser. No. 794,713
Int. Cl. B21h *5/00*
U.S. Cl. 72—73 27 Claims



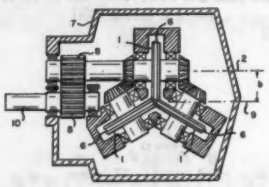
The invention is directed to the method and apparatus for forming a gear by rolling wherein the blank in engagement with roller gears is rotated about its axis. Simultaneously a small relative oscillating or tumbling movement is executed between the gear blank and the roller gears with the rotational speed of the gear blank being different from the single oscillation frequency or its integral multiple. The various oscillation movements to provide the gear toothing with radial and/or axial crowns of different values. It is also possible to separately impart predetermined amounts of radial and axial crowns to the formed gears.

3,584,489
ROLLING MILL
Pierre Peytavin, Neuilly-sur-Seine, France, assignor to Societe Anonyme Dite: Vallourec Usines A Tubes De Lorraine Escaut Et Vallourec Reunies, Paris, France
Filed Dec. 19, 1968, Ser. No. 785,099
Claims priority, application France, Dec. 20, 1967, 133,147
Int. Cl. B21b 17/10
U.S. Cl. 72—208 7 Claims



A rolling mill comprising a bearing block supporting the rolls and adapted to be subjected to reciprocating movement, said bearing block being integrally connected to a mobile mechanism comprising two eccentric masses, turning in opposite direction in synchronism with the reciprocatory displacements of the bearing block.

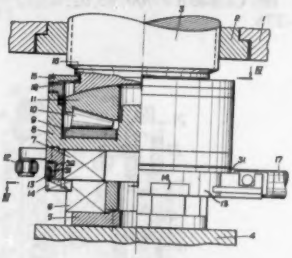
3,584,490
MULTISTAND UNIVERSAL ROLLING MILLS
Ali Bindernagel, Dusseldorf-Gerresheim, Germany, assignor to Kocks Friedrich
Filed Apr. 23, 1969, Ser. No. 818,497
Claims priority, application Germany, May 2, 1968, P 17 52 283.7
Int. Cl. B21b 13/10, 35/00
U.S. Cl. 72—224 4 Claims



A roll stand is provided for multistand rolling mills such as wire rod mills having interchangeable stands in which a roll stand is provided with an input shaft adapted to be driven by an external drive means, an intermediate shaft is provided in said stand driven by said input shaft, said intermediate shaft driving rolls in said stand and connected to the input shaft by intermediate gears having a gear ratio adjusted to the diameter of the rolls whereby the peripheral speed of the rolls is uniform in any given stand regardless of roll diameter.

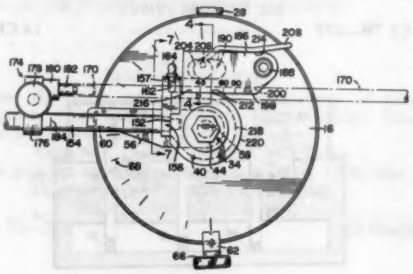
3,584,491
DEVICE TO BE USED IN ROLL STANDS
Alfred Stich, Linz, Austria, assignor to Vereingte Osterreichische Eisen-und Stahlwerke Aktiengesellschaft, Linz, Austria
Filed Nov. 18, 1968, Ser. No. 776,582
Claims priority, application Austria, Nov. 24, 1967, A 10618/67
Int. Cl. B21b 31/32
U.S. Cl. 72—245 6 Claims

The present invention relates to a device to be used in roll stands containing inserts and adjusting spindles and movable intermediate pieces therebetween, and consists in designing the intermediate piece so as to be composed of interengageable parts, such as cogged discs which are displaceable in rela-



tion to one another from a position of nonengagement into a position of engagement, whereby the overall height of the intermediate piece is reduced and free handling space is provided beneath the adjusting spindles.

3,584,492
TUBE-BENDING TOOL
Harry G. Dodge, Painesville, and Emery J. Zahuranec, Solon, both of, Ohio, assignors to Crawford Fitting Company, Solon, Ohio
Filed Nov. 13, 1968, Ser. No. 775,259
Int. Cl. B21d 5/04
U.S. Cl. 72—310 14 Claims

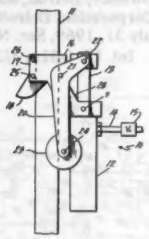


Disclosed is a tube-bending tool comprising a forming roll adapted to be turned by means of a crank. A tube clamp bar is operatively secured to the forming roll and is provided with a tube clamp. A cam shoe is pivotally mounted on the tool cover and is adapted to be moved into or out of engagement with the forming roll by means of a handle. Opposed grooves are provided in the forming roll and the cam shoe for the purpose of supporting the tube as the forming roll is rotated. The opposed grooves have a transverse dimension slightly larger than the tube outer diameter whereby the tube is free to elastically deform in a transverse plane during the bending operation.

3,584,493
WIRE BENDING APPARATUS
Silas Ray Crees, 1694 Avocado Ave., Eau Gallie, Fla.
Filed Oct. 10, 1968, Ser. No. 766,477
Int. Cl. B21d 11/04
U.S. Cl. 72—321 8 Claims

A wire bending apparatus for bending electrical cables and the like, in narrow confines such as panel boxes. A supporting block is provided for supporting a cable during a bending operation and a hydraulically operated lever moves the wire

on a guide connected to the supporting block. The apparatus is flexibly mounted to a hydraulical cylinder or the like, for



operation in narrow confines requiring bends of specific degrees and locations.

3,584,494

HIGH-FLEXIBILITY STEEL WIRE AND METHOD OF TREATING SAME

Hans Geipel, Oberhausen-Sterkrade, Echehard Forster, Oberhausen, and Wilfried Heinemann, Dinslaken, Germany, assignors to Firma Huttenwerk Oberhausen AG, Oberhausen, Germany

Continuation-in-part of application Ser. No. 675,522, Oct. 16, 1967, and continuation-in-part of application Ser. No. 750,642, Aug. 6, 1968, and continuation-in-part of application Ser. No. 805,941, Feb. 17, 1969
Filed May 20, 1969, Ser. No. 826,229
Claims priority, application Germany, May 21, 1968
P 17 58 380.1
Int. Cl. B21f *21/00*
U.S. Cl. 72—364 7 Claims

Steel wire drawin in a multistage rolling mill, with intermediate water cooling just before the last stage, emerges from that stage with a temperature of approximately 800° C. and is rapidly cooled, preferably with the aid of a fluidized bed, to a temperature between about 500° and 550° where transformation of austenite to pearlite takes place, the final phase of this transformation taking place substantially isothermally. This wire, when drawn to a fraction of its original diameter, manifests a microcrystalline structure with distinct lamellate zones and has improved torsional and flexural capacity compared with lead-patented and air-patented wires.

3,584,495

TOOL FOR SHEAR FORMING AN ELECTRICAL CONNECTOR IN A WIRE

George F. Rausina, Chicago, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 24, 1969, Ser. No. 801,579
Int. Cl. B21d *28/00*; H05k *3/30*; B21d *31/00*
U.S. Cl. 72—333 6 Claims

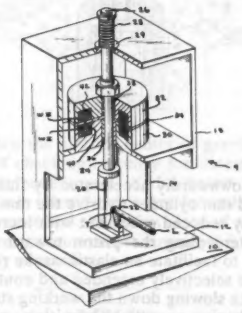
The tool includes a holding mechanism which prevents the deformation of a wire inserted therein along a first cross-sectional axis of the wire, and the tool further includes two shearing blades lying in separate planes which are parallel to the horizontal axis of the wire. These blades are moved into the wire thereby deforming it along its second cross-sectional axis into two bowed portions. The resulting connector is suitable both for making electrical connection to a cylindrical receiving portion, such as the through holes of a printed circuit board, and for holding components and wires in place prior to being flow soldered thereto.

3,584,496

MAGNETIC ACTUATOR

Joseph Richard Keller, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 3, 1968, Ser. No. 726,300
Int. Cl. B21j *15/24*
U.S. Cl. 72—430 23 Claims



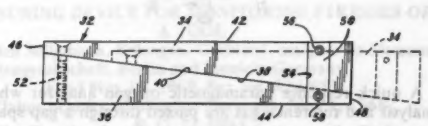
A means and method and system for working material forming dies is disclosed featuring a magnetically actuated ram. Ram drive is provided by a tractive magnet having a force versus displacement characteristic similar to the force-displacement characteristic required in certain types of metal working operations such as crimping sheet metal terminals onto lead wires. Circuits are disclosed for providing a control of applied field to motor elements which in turn permits a control of ram displacement, force, velocity, acceleration, and/or dwell time of a die or dies drawn by the ram.

3,584,497

SLIDING PARALLEL WAYS FOR RELEASING JAMMED PRESS

William L. Pohjola, Southfield, Mich., assignor to Dover Corporation (De-Sta-Co Division)

Filed Aug. 16, 1968, Ser. No. 753,140
Int. Cl. B21j *13/02*
U.S. Cl. 72—448 6 Claims

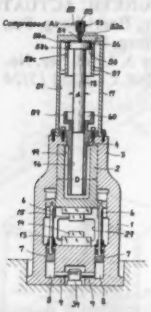


Method and apparatus for freeing jammed press from dead center position comprising sliding parallel wedge members interposed between dies and die bolster plate adapted to retain fixed position during normal press operation and for relative sliding for relieving pressure upon press jamming.

3,584,498
FLUID-OPERATED DROP-FORGE PRESS

Hans Beche, Gardeleubergstr 29, 5609 Huckeswagen, Germany

Filed Nov. 8, 1968, Ser. No. 774,259
Claims priority, application Germany, Nov. 9, 1967, P 16 27 413.8
Int. Cl. B21j 7/24
U.S. Cl. 72—453 8 Claims

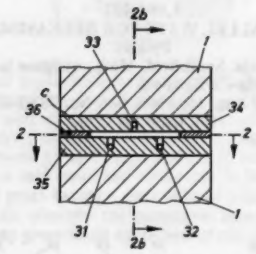


A plunger, downwardly accelerated by fluid pressure, enters an oil-filled ram cylinder to drive the ram toward a press bed at relatively reduced speed but with increased force, an air cushion intercepting the piston toward the end of its working stroke to facilitate an elastic stroke reversal. The air cushion may be selectively extended and controlledly vented to act as a brake slowing down the working stroke for deburring or other shaping operations requiring only a fraction of the available ram force.

3,584,499
QUICK RESPONSE OXYGEN ANALYSER

Heinz Hummel, Konigstein-Johanniswald, Germany, assignor to Hartmann & Braun Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 30, 1968, Ser. No. 756,655
Claims priority, application Germany, Aug. 31, 1967, P 16 48 924.0
Int. Cl. G01n 7/00, 27/00
U.S. Cl. 73—23 3 Claims

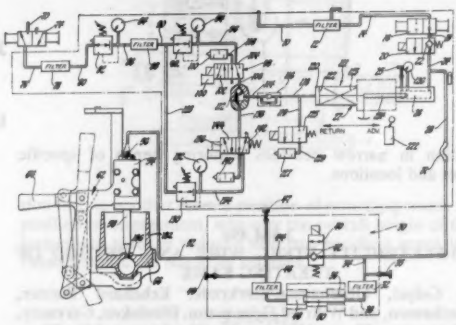


A quick response paramagnetic oxygen analyzer wherein analysis and reference gas are passed through a gap space in a periodically excited ferromagnetic circuit affording a homogeneous or uniform zone and an inhomogeneous or nonuniform zone of the magnetic field. Intermixing and diffusion of the gases can occur only in homogeneous zone and in an exit conduit. A pressure difference detector for the analysis and reference gases at their entrance into the inhomogeneous zone measures relative susceptibilities and hence oxygen content of the two gases.

3,584,500
FLUID LEAKAGE TEST METHOD AND SYSTEM

Ward F. Diehl, New Baltimore; Robert E Heintz, Royal Oak, and Marshall S. Swisher, Detroit, all of, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed July 31, 1969, Ser. No. 846,377
Int. Cl. G01m 3/26
U.S. Cl. 73—39 9 Claims



An automatic electrically controlled fluid plumbing test system including separate pneumatic and hydraulic fluid circuits and having application, in one form, to vehicle brake systems. The pneumatic fluid circuit contains solenoid valves that are cycled to selectively actuate a hydraulic fluid pressure-intensifying unit. The hydraulic fluid circuit also contains solenoid-controlled valves and initially supplies the fluid plumbing system with fluid at a line pressure of 20 to 200 p.s.i. completely filling the system. The pneumatic circuit supplies a first air pressure sufficient to actuate the intensifier and develop a relatively high fluid pressure P_1 in the system under test, this pressure being approximately 2000 p.s.i. in a vehicle brake system. This pressure is held in the system under test for a time period sufficient to expand the fluid plumbing and test for mechanical defects. The pneumatic system then automatically cycles and supplies a second air pressure to the intensifier whereby a somewhat lower fluid pressure P_2 is developed, this pressure being approximately 1600 p.s.i. in a vehicle brake system. The P_2 fluid is held in the plumbing system for a time period sufficient to stabilize the plumbing and temporarily arrest all creep and expansion inherent in the lines. This pressure on the fluid is then automatically held in the portion of the plumbing being tested for a predetermined time period and any leakage occurring is registered on a leak meter. If the fluid-plumbing system is acceptable and meets a predetermined standard, electrical control circuitry automatically energizes apparatus for stamping or punching a card indicating approval. In the event a leak occurs; there is excessive air in the system; or in the case of a test concerning a vehicle brake system, the brake warning switch is defective; the cycle is automatically terminated. Upon completion of the test the control circuitry automatically reconditions the test apparatus for use on a subsequent fluid-plumbing system.

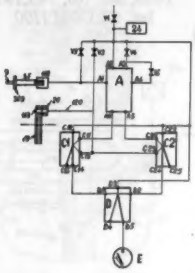
3,584,501
APPARATUS FOR CIGARETTE INSPECTION

Renato Marradi, and Giovanni Pezzi, both of Bologna, Italy, assignors to American Machine & Foundry Company

Filed Mar. 26, 1969, Ser. No. 810,610
Claims priority, application Italy, Apr. 3, 1968, Jan. 13, 1969, 6926 A/68;6703 A/69
Int. Cl. G01m 3/26
U.S. Cl. 73—45.1 2 Claims

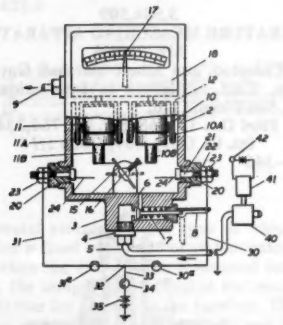
Cigarettes that are to be inspected are fed serially to aligned pockets of two sprocket wheels and retained in position by suction. Thereafter, the cigarettes are shifted axially

in the pockets by a plunger-cam-type of structure to position an end of a cigarette into a mouthpiece and against a perforated plug. Fluid under pressure is caused to flow through the perforated plug and through the cigarette to the atmosphere. The pressure of the fluid at the perforated plug is



determined by the throttling effected by the cigarette. The pressure of the fluid at the perforated plug is compared to a constant pressure in a fluidic logic circuit, variations greater than a predetermined value indicating the presence of a defective cigarette.

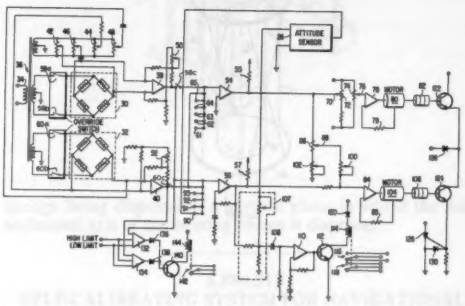
3,584,502
VISCOSITY GAUGING DEVICE
Fernard L. Gerin, Chapel Hill Road, Red Bank, N.J.
Filed Mar. 10, 1969, Ser. No. 805,481
Int. Cl. G07n *11/10*
U.S. Cl. 73—57 **6 Claims**



A viscosity gauging device wherein two weighted pistons which are kept raised by crankcase oil pressure drop when the pressure is cut off. The pistons travel the same distance when the viscosity of the crankcase oil matches the viscosity of a standard sample, but relatively different distances when the crankcase oil is thicker or thinner than the sample. A flexible wire contact is located beneath each piston and arranged so that no circuit is closed if both pistons move to the same extend, but a circuit is closed if either one moves further than the other. The closing of the circuit operates a remotely located signal to show that the crankcase oil needs attention.

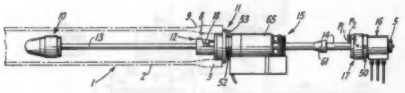
3,584,503
AIRCRAFT WEIGHT AND CENTER OF GRAVITY DETERMINATION SYSTEM WHICH INCLUDES ALARM, SELF-CHECKING, AND FAULT OVERRIDE CIRCUITRY
Donald A. Senour, Carlisle, Mass., assignor to BLH Electronics Inc., Waltham, Mass.
Filed Dec. 4, 1969, Ser. No. 882,001
Int. Cl. G01m *1/12*
U.S. Cl. 73—65 **10 Claims**

An aircraft gross weight and center of gravity determination system is provided for measuring, computing and displaying the aircraft gross weight and to determine the center of gravity thereof. The weight of the aircraft and the distribution of the weight are sensed with strain gage transducers mounted in the landing gear axles and in the nose restraint. The output voltage from the transducers is a function of the vertical load thereon. The system incorporates circuitry for



determining when the aircraft center of gravity is beyond a preset limit, self-checking circuitry for determining if each channel and component part of the system is functioning properly, and fault override circuitry for utilizing a complimentary and symmetrical channel in place of a detected faulty channel whereby accurate measurements may be obtained despite the faulty channel.

3,584,504
ULTRASONIC INSPECTION APPARATUS AND METHOD FOR NONDESTRUCTIVE TESTING OF TUBULAR MEMBER HAVING VARYING INNER DIAMETER
Noel B. Proctor, and William T. Walters, both of Houston, Tex., assignors to AMF Incorporated, New York, N.Y.
Filed Oct. 3, 1969, Ser. No. 863,568
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.8 **18 Claims**



The invention is particularly useful for ultrasonic inspection of tubular goods having upset ends, i.e., end regions which have been worked during manufacture to produce wall thicknesses which are greater than in the remaining portions of the members, the upset ends having tapering inner and/or outer surfaces over a portion of their thickened regions.

3,584,505
MEASURING DEVICE FOR MONITORING STRESSES OF A TOOL
Heinrich Seligmann, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed May 15, 1969, Ser. No. 824,833
Claims priority, application Germany, May 1, 1968, P 17 73 550.1
Int. Cl. G01l *5/16*
U.S. Cl. 73—133 **6 Claims**

A device for measuring stresses, including torque and bending moment of a tool, is disclosed wherein a rotor member operatively associated with the tool has strain gauges disposed thereon substantially parallel to the longitudinal axis to sense the bending moment at a tool and strain gauges disposed at an angle to the longitudinal angle to sense

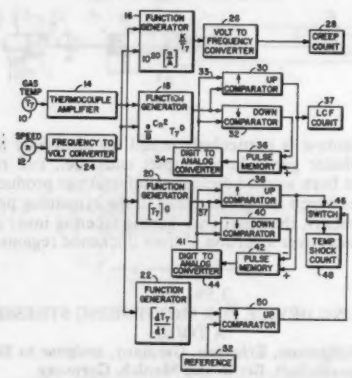
torque at the tool. Slots are provided in the rotor member to make it spring in the axial direction. The outputs of the strain

gauges are sensed to provide an indication of the torque and bending moment operative on the tool.

3,584,506
FUEL SYSTEM FLOW PROCESS
Joseph S. Smatko, Santa Barbara, Calif., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 29, 1968, Ser. No. 780,225
Int. Cl. G01p *5/00*
U.S. Cl. 73—194R **10 Claims**

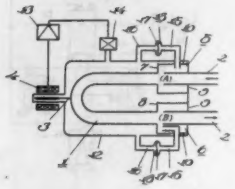
A low-foaming aqueous solution containing a surface active agent is used as a fuel system test liquid.

3,584,507
ENGINE USAGE INDICATOR
Rudolph Hohenberg, Trumbull, Conn., assignor to Avco Corporation, Stratford, Conn.
Filed Mar. 6, 1970, Ser. No. 17,270
Int. Cl. G01m *15/00*
U.S. Cl. 73—116 **17 Claims**



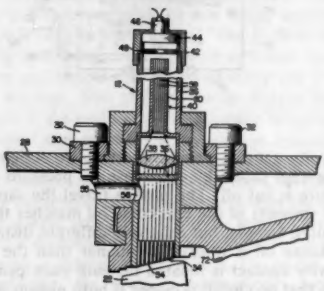
Intervals between overhaul are determined by continuously measuring power turbine temperature and shaft speed and by converting the collected data into numbers of pulses proportional to creep, low cycle fatigue, and temperature shock fatigue. The number of pulses is then summed in digital counters. The total number of pulses due to creep, low cycle fatigue, and temperature shock fatigue are used as a measure of the exhausted life of the engine.

3,584,508
FLOW METER
Kamekichi Shiba, No. 159, Kagacho, Bonkyo-ku, Tokyo, Japan
Continuation-in-part of application Ser. No. 500,666, Oct. 22, 1965, now Patent No. 3,429,181. This application July 8, 1968, Ser. No. 743,199
Int. Cl. G01j *1/00*
U.S. Cl. 73—194 **6 Claims**



The flow meter of the present invention, viz, a movable U-tube flow meter of the present invention is a hydrodynamical one not based on the Bernouilli's theorem and hence it enables the measurement of a flow rate regardless of viscosity losses. The main movable U-tube is connected to fixed inlet and outlet tubes by suitable joints and all of these parts are preferably enclosed in a sealed housing. The pressure of the fluid outside of the main movable tube is so regulated that the tube is kept in its position of zero flow rate. The flow rate is calculated from the measured values of the difference of pressure at the inlet end and the outside of the main movable tube together with the difference of pressure at the outlet end and the outside of the main movable tube, provided the sectional areas of the inlet and outlet ends and the effective areas of the joints are known.

3,584,509
TEMPERATURE MEASURING APPARATUS AND METHODS
William A. Compton, and Albert Marshall Gaylord, both of San Diego, Calif., assignors to International Harvester Company, San Diego, Calif.
Filed Oct. 1, 1968, Ser. No. 764,234
Int. Cl. G01j *5/04;* **G02b** *5/14*
U.S. Cl. 73—346 **14 Claims**

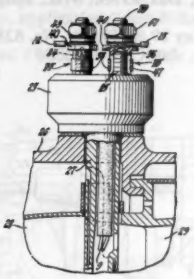


Temperature measuring apparatus employing a gas collimator and a photovoltaic detector, methods of measuring temperature therewith, and temperature control and indicating systems employing the same.

3,584,510
THERMOCOUPLE LEAD ATTACHMENT
James W. Harris, Speedway, Ind., assignor to General Motor Corporation, Detroit, Mich.
Filed June 28, 1967, Ser. No. 649,618
Int. Cl. G01k *7/02*
U.S. Cl. 73—359 **4 Claims**

A push-on pull-off readily attachable and removable connection between thermocouples and the leads which run

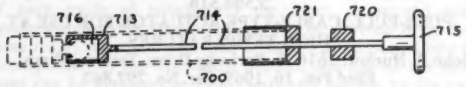
from the thermocouples to instruments which respond to the temperature sensed. The terminal studs of the thermocouples, which are of Alumel and Chromel, are threaded. Each lead is bolted to an adapter of Alumel or Chromel which



defines a socket for the terminal stud bounded by four fingers separated by saw cuts. A contracting ring spring is disposed around the adapter so as to cause the fingers to compressively engage the terminal stud.

3,584,511
DEVICE FOR SAMPLING AND EXTRACTING MOLTEN METAL

William J. Collins, 7005 Madison St., Merrillville, Ind.
Continuation-in-part of application Ser. No. 713,640, Mar. 18, 1968. This application Sept. 15, 1969, Ser. No. 857,870
Int. Cl. G01n *1/10*
U.S. Cl. 73—425.4 **7 Claims**

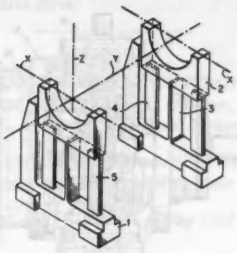


A molten metal sampler of the type in which a sample receiving means is fixed in the end of an elongated cardboard tube so that when the end of tube is inserted into a bath of molten metal, the sample is solidified in the receiver is provided with a device for extracting the receiver. The extractor includes a long rod having a means on one end for grasping the receiver intended to be inserted through the unoccupied end of the cardboard tube and a slidable cap for engaging the unoccupied end of the tube. One embodiment utilizes the percussion system for jarring the receiver free from the tube and the other embodiment utilizes a leverage system for developing sufficient force to loosen the receiver.

3,584,512
BEARING STAND FOR BALANCING MACHINES

Manfred Heiland, Hahn, and Hatto Schneider, Heppenheim, both of, Germany, assignors to Carl Schenck Maschinenfabrik G.m.b.H., Darmstadt, Germany
Filed Oct. 31, 1969, Ser. No. 872,891
Claims priority, application Germany, July 25, 1969, P 19 37 865.5
Int. Cl. G01m *1/02*
U.S. Cl. 73—475 **8 Claims**

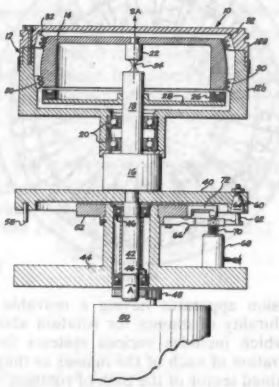
Bearing stand for balancing machines including a bearing bridge having a main axis extending horizontally for supporting an object to be balanced so that its axis is horizontal and perpendicular to the main axis of the bearing bridge, a base for the stand, and three leaf springs extending in a row vertically from the stand base and carrying the bearing bridge at the upper ends thereof, the middle leaf spring being disposed in a vertical plane in which the horizontal axis of an object supported by the bearing bridge is disposed, and the end leaf



springs being disposed in a vertical plane in which the main horizontal axis of the bearing bridge is disposed.

3,584,513
SELF-CALIBRATING SYSTEM FOR NAVIGATIONAL INSTRUMENTS

Robert L. Gates, Ridgewood, N.J., assignor to Singer-General Precision, Inc., Little Falls, N.J.
Filed Jan. 6, 1969, Ser. No. 789,143
Int. Cl. G01c *19/02*
U.S. Cl. 74—5.34 **3 Claims**



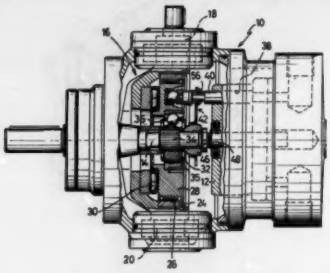
A system for recovering the drift coefficients of two navigational gyros for a vehicle, each of the gyros having a rotatable outer casing and two input axes, wherein the gyros are positioned so that their spin axes extend at an angle to each other and a precession torque is applied to the gyros to maintain their spin axes in a predetermined spatial position. The casing of each gyro is rotated about an axis parallel to its spin axis to predetermined angular positions, so that a drift coefficient can be established for each input axis.

3,584,514
AXIAL PISTON PUMP

Karlmann Hamma, Marbach near, Germany, assignor to Superior-Tabbies, Inc., Chicago, Ill.
Filed Nov. 13, 1968, Ser. No. 775,376
Claims priority, application Germany, Nov. 15, 1967, P 16 53 470.6
Int. Cl. F16h *33/00*; F04b *1/02*
U.S. Cl. 74—60 **12 Claims**

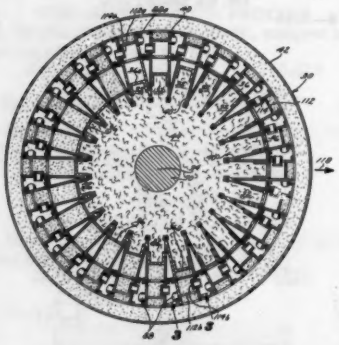
A variable-delivery axial piston pump wherein the heads of pistons are biased toward the wobble plate by a star-shaped plate spring which is free to swivel on the drive shaft. Followers which engage balls provided in the wobble plate abut

with their flat rear faces against flat end faces provided on the heads of pistons so that the followers can move radially



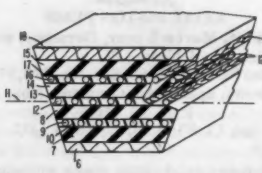
with reference to the pistons when the inclination of the wobble plate is changed to change the delivery of the pump.

3,584,515
PROPULSION APPARATUS
Laszlo B. Matyas, 8212 Pawtucket Drive, Huntington Beach, Calif.
Filed Jan. 9, 1969, Ser. No. 790,008
Int. Cl. F16h *27/04*
U.S. Cl. 74—84 **9 Claims**



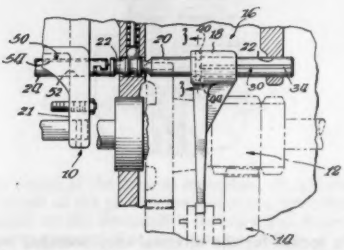
A propulsion apparatus having a movable frame which mounts a plurality of masses for rotation about a common axis, and which includes various systems for varying the radius of gyration of each of the masses as they pass through a predetermined sector of the path of rotation. This results in an unbalanced centrifugal force which propels the frame in a direction which depends upon the location of the sector in which the unbalance occurs.

3,584,516
ENDLESS BELTS REINFORCED WITH BRAIDED STRANDS
John S. Burpulis, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Feb. 20, 1969, Ser. No. 800,994
Int. Cl. F16g *5/16*
U.S. Cl. 74—233 **10 Claims**



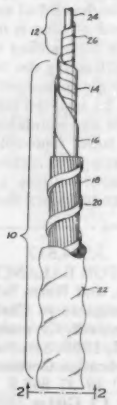
An endless belt consisting essentially of a braided strand embedded in and adhered to an elastomeric polymer. The invention is particularly useful in manufacturing raw edge V-belts.

3,584,517
MECHANISM FOR INTERCONNECTING PARTS
John L. Tomlinson, Oak Creek, Wis., assignor to J.I. Case Company
Filed May 29, 1969, Ser. No. 828,840
Int. Cl. G05g *9/00*
U.S. Cl. 74—473 **3 Claims**



Interlock mechanism for securing a shaft in an opening. An axial recess extends from one end of the shaft and is intersected by a circumferential recess spaced from the end of the shaft. A ball is forced into a counterbore extending transversely of the opening with a portion of the ball located in the opening. The axial recess is aligned with the ball and the shaft is shifted along the opening until the ball is disposed in the circumferential recess whereupon rotation of the shaft will move the ball out of the axial recess and along the circumferential recess. The shaft is then maintained in the rotated position to secure the shaft in the opening.

3,584,518
PUSH-PULL, CABLE-TYPE ACTUATOR FOR USE AT HIGH TEMPERATURES
John B. Hurlow, 2616 W. Parkway Drive, Tacoma, Wash.
Filed Feb. 10, 1969, Ser. No. 797,867
Int. Cl. F16c *1/10*
U.S. Cl. 74—501 **8 Claims**



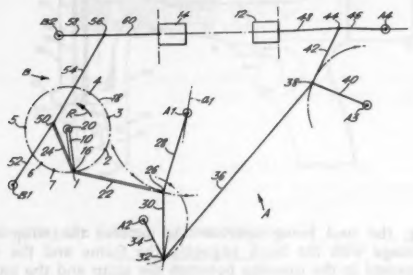
A push-pull, cable-type actuator for use at high temperatures comprises a flexible metal sheath and a flexible metal core mounted for sliding longitudinal movement in the sheath. The sliding surfaces of both sheath and core are comprised of a precipitation hardening steel fabricated in a soft condition and hardened by swaging and heat treating to a condition in which the meeting, rubbing surfaces will not spall during use of the actuator at high temperatures.

3,584,519

MECHANISMS FOR CONVERTING A ROTARY MOTION INTO LINEAR MOTION

Eugen Weber, Hinwil, Zurich, Switzerland, assignor to Harry Dudley Wright and Robert Ernest Leclerc, Geneva, Switzerland

Filed Apr. 23, 1969, Ser. No. 818,518
Claims priority, application Great Britain, May 7, 1968, 21517/68
Int. Cl. G05g *1/04;* B29c *3/00*
U.S. Cl. 74—520 14 Claims



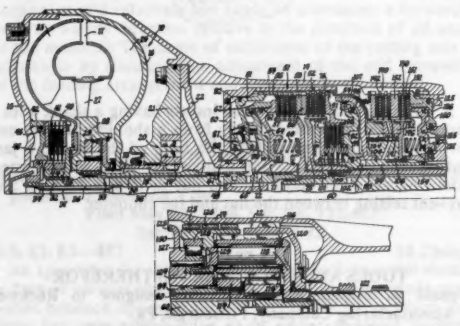
The invention is a set of series-connected toggle linkages adapted to transform an input rotary motion into an output cyclic reciprocatory linear displacement having a predetermined dwell period over an arc of the input rotary motion. Each toggle linkage in a set has a mean "made" working position and a mean "broken" working position, and has its one extremity mounted on a fixed pivot axis. The other extremity of each toggle linkage represents the output drive and, except in the case of the last toggle in the set, this output extremity is directly coupled to the knee joint of the next toggle, the arrangement being such that, in the "made" mean position, each knee joint is driven overcenter so that there is no significant output from the toggle for a finite proportion of each cycle of rotation of the input. A second and synchronized cyclic linear motion can be derived from the same rotary input and arranged to have a dwell period which overlaps that of the first linear motion, and one of the motions can be arranged to have two dwell periods by the expedient of arranging that the toggles in the series which are simultaneously broken while the remainder is or are made for the duration of one dwell period are subsequently simultaneously made for the other dwell.

3,584,520

TRANSMISSION

August H. Borman, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 28, 1969, Ser. No. 880,784
Int. Cl. F16h *57/10, 47/08*
U.S. Cl. 74—763 4 Claims



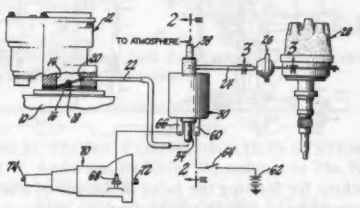
A vehicle transmission having a hydrodynamic torque converter and planetary gearing combined with three clutches, three brakes, two one-way brakes and a one-way clutch to provide four forward drives including an overdrive and also to provide a reverse drive.

3,584,521

IGNITION TIMING CONTROL

Robert S. Tooker, and James J. Dawson, both of East Lansing, Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of application Ser. No. 812,011, Apr. 1, 1969, now abandoned. This application June 1, 1970, Ser. No. 41,888
Int. Cl. F02d *13/00;* F02p *5/04*
U.S. Cl. 74—856 5 Claims



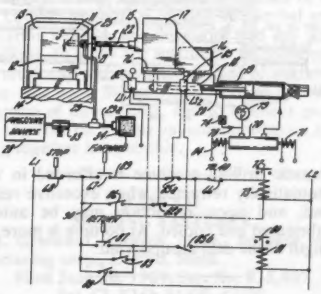
A valve in the vacuum conduit between the induction passage and the distributor vacuum advance unit closes when the transmission is in the lower drive ratios to prevent vacuum advance during low drive ratio operation and opens when the transmission is in high drive ratio to permit vacuum advance during high drive ratio operation. This control has been found advantageous in reducing automotive exhaust emissions of unburned hydrocarbons and oxides of nitrogen.

3,584,522

MACHINE TOOL WITH TOOL BREAK DETECTOR

Ralph E. Smafield, Rockford, Ill., assignor to The Ingersoll Milling Machine Company, Rockford, Ill.

Filed July 7, 1969, Ser. No. 839,252
Int. Cl. B23b *47/24*
U.S. Cl. 77—5 5 Claims



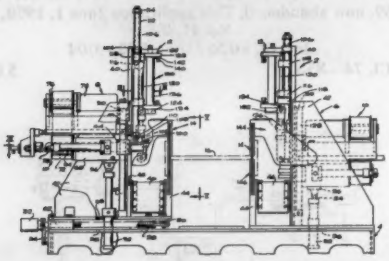
In a machine tool such as a power-fed drill, tap, or reamer, a feeler in the form of an air jet is positioned close to and directed against the side of the tool near the leading end thereof so that, during rotation of the tool, the flutes and ribs alternating around the tool shank produce, in the jet supply system, pressure pulsations which are converted into electrical pulses and then to a unidirectional voltage applied to a relay which remains energized so long as the pressure pulsations continue but is deenergized upon interruption of the pulsations thus giving a signal indicating breakage of the tool.

3,584,523

STRUCTURAL BEAM DRILLING MACHINE

George William P. Evans, North Surrey, British Columbia, Canada, assignor to Dominion Bridge Company Limited, Montreal, Quebec, Canada

Filed June 18, 1969, Ser. No. 834,304
Claims priority, application Canada, May 23, 1969, 052,427
Int. Cl. B23b *39/22*
U.S. Cl. 77—21 10 Claims



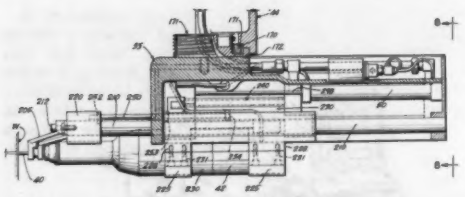
A machine for forming the holes in flanges of a structural beam comprising a drilling machine having relatively movable drilling brackets. Each drilling bracket has a drill mounted therein movable perpendicularly to the relative movement direction of the brackets. Each drill bracket further comprises beam web supporting means and means for locating the drill in a drilling position. The support means control the said locating means in dependence upon the thickness of the beam web.

3,584,524

TORQUE RESISTANCE RESPONSIVE DRILLING MACHINE

Bob J. Langenbach, Athens, Ohio, assignor to Abex Corporation, New York, N.Y.

Filed Aug. 13, 1968, Ser. No. 752,200
Int. Cl. B23b *47/24*
U.S. Cl. 77—32.4 6 Claims



An automatic drilling machine is afforded in which the drill is automatically retracted when excessive resistance is encountered, and upon retraction may be automatically cleaned, lubricated and cooled. At no time is more than one-half the length of the drill unsupported.

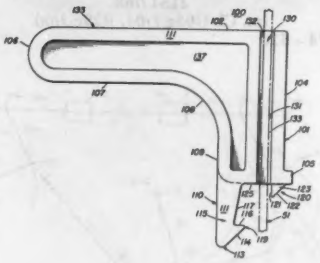
3,584,525

RELEASING TOOL FOR ONE-PIECE CABLE TIE

Jack E. Caveney, Chicago; Roy A. Moody, Flossmoor, and William E. Bingham, Tinley Park, all of, Ill., assignors to Panduit Corp., Tinley Park, Ill.

Filed Sept. 22, 1969, Ser. No. 859,996
Int. Cl. B25b *27/00*
U.S. Cl. 81—3 16 Claims

A molded, single-piece releasing tool comprises a body having a straight, narrow passage therethrough, a wedge and a hook respectively extending from one end thereof on opposite sides of the passage, and a handle extending from the other end thereof; the tool is used with an assembled one-piece cable tie in which one end of a strap is disposed through an opening in a frame at the other end thereof and is engaged with a toothed pawl pivotally mounted in the open-



ing, the tool being operative to receive the strap in the passage with the hook engaging the frame and the wedge disposed in the opening between the strap and the pawl for disengagement thereof.

3,584,526

TOOL FOR INSTALLING THREADED INSERT

Walter H. Kleinhenn, Flourtown, Pa., assignor to Standard Pressed Steel Co., Jenkintown, Pa.

Filed Jan. 27, 1969, Ser. No. 794,057
Int. Cl. B25b *13/50*
U.S. Cl. 81—53.2 8 Claims

A tool for installing threaded inserts having a shank with a threaded stud projecting axially from a shoulder at one end for threaded engagement with the bore of the insert, a jam nut threaded on the stud and a dissimilar metal washer interposed between the shoulder and nut to reduce friction and prevent seizing between the nut and the shoulder.

3,584,527

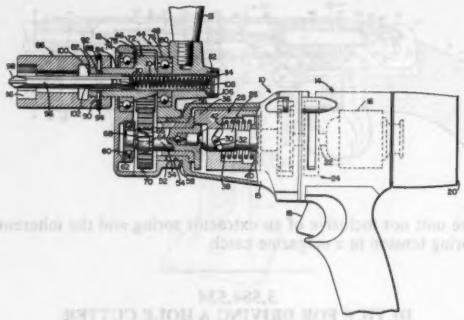
TOOLS AND ATTACHMENTS THEREFOR

Donald R. Bosten, Pittsburgh, Pa., assignor to Rockwell Manufacturing Company, Pittsburgh, Pa.

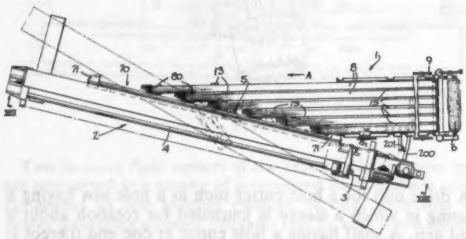
Filed July 29, 1968, Ser. No. 748,399
Int. Cl. B25b *17/00*
U.S. Cl. 81—56 9 Claims

Attachments for making impact wrenches and the like

capable of threading a retainer onto a threaded fastener while holding the fastener against rotation.



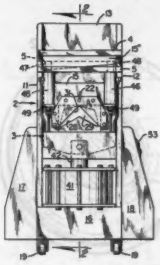
3,584,528
BIAS CUTTER
Jean Leblond, and Jean Biet, both of Compiegne (Oise), France, assignors to Uniroyal Englebert France S.A., Paris, France
Filed Jan. 28, 1969, Ser. No. 794,562
Int. Cl. B26d 5/20
U.S. Cl. 83—208 35 Claims



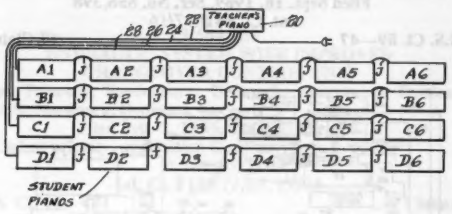
Apparatus for bias cutting, at relatively low angles, a tire material including an elastomer having embedded therein a plurality of longitudinally extending wire cords. The material is intermittently advanced alternately longer and shorter distances with the length of these distances chosen so as to compensate for the distortions in the material caused by cutting, at said relatively low angle, in alternately a forwardly and rearwardly direction relative to the direction of advance of the material. The angle of inclination of the cutting axis is adjustable by simultaneous adjustment of the end extremity of the feeding arrangement and the cutter path.

3,584,529
HYDRAULIC SHEAR MACHINE
Donald J. Wallace, Denver, Colo., assignor to Mission Corporation, Englewood, Colo.
Filed May 23, 1968, Ser. No. 731,427
Int. Cl. B26d 7/04, 5/12
U.S. Cl. 83—457 10 Claims

An apparatus for shearing workpieces such as metal sheets or bars of various shapes includes a reciprocating blade supported between opposing sides of an upright frame where the blade has one cutting edge at its upper end and another cutting edge in its body with cooperative interchangeable dies on frame for performing cuts on different shapes of workpieces. A clamp including a movable table member and opposing stationary member hold the workpiece for cutting by the upper edge of the blade, the clamp and blade being hydraulically actuated and fully coordinated in movement through each cutting operation.



3,584,530
ELECTRONIC COMMUNICATION SYSTEM
Clifford W. Andersen, De Kalb, Ill., assignor to The Wurlitzer Company, Chicago, Ill.
Filed May 26, 1969, Ser. No. 827,854
Int. Cl. G09b 15/00
U.S. Cl. 84—470 16 Claims

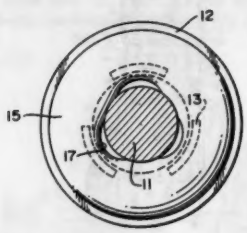


An electronic communication system for use in combination with a plurality of electronic keyboard instruments to provide intercommunication between an instructor seated at one of the keyboard instruments and a group of students each seated at a corresponding one of the other instruments. The instruments are interconnected by means of cables and switching circuits to provide private line verbal and musical communication between the instructor and any selected one of the students, to allow the instructor to communicate verbally and musically with selected groups of students, to connect audio aids such as tape recorders or the like to any selected group of instruments, and to connect groups of instruments together on a common communication channel for performing together in ensemble.

3,584,531
SEALING FASTENER
Richard J. Greenleaf, Ipswich, Mass., assignor to Barwood Manufacturing corp., Everett, Mass.
Filed June 20, 1969, Ser. No. 835,037
Int. Cl. F16b 35/00, 43/00
U.S. Cl. 85—1 1 Claim

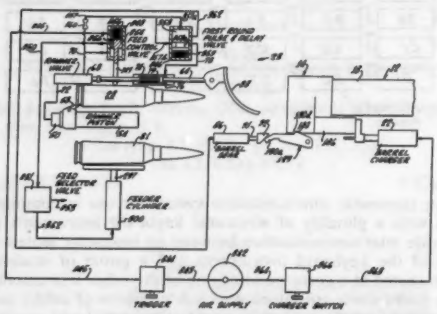
The disclosure is of a novel sealing washer designed for use in a threaded fastener assembly. The washer is characterized by a domed and perforated backing member, preferably of metal, having an outer rim and an inner flange divided into a pattern of projecting segments providing spaced radial passages and terminating in a common plane offset in advance of the plane of the outer rim. The backing member carries a ring of plastic sealing compound that surrounds the segments and may flow freely through the passages between them and enter the threads of a screw or bolt when assembled in the fastener. The sealing washer thus described is in

itself a sealable product or it may be distributed as a unit or as a part of the assembled fastener. The disclosure also describes a novel process of assembling the elements of the complete fastener characterized by applying a complete ring



of viscous sealing compound to a perforated backing member while rotating with a headed screw and simultaneously forming spaced radial sprues extending inwardly to the thread of the screw or bolt.

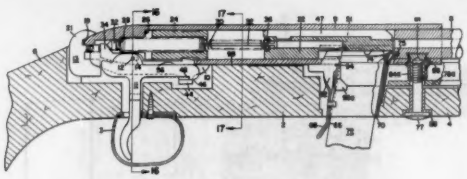
3,584,532
AUTOMATIC GUN WITH EJECTION ACTUATED RAMMER
Eugene M. Stoner, Port Clinton, and George W. Wight, Jr., Oak Harbor, both of, Ohio, assignors to Oberlikon-Buehrle Holding A.G. Zurich-Oerlikon, Zurich, Switzerland
Filed Sept. 16, 1969, Ser. No. 858,398
Int. Cl. F41f *17/16*
U.S. Cl. 89—47 **17 Claims**



An ammunition receiver is axially aligned with a reciprocating barrel and is separated from the barrel by a pivotable deflector. As the barrel is driven forwardly by springs loaded by recoil forces from the previous firing, a round of ammunition is propelled forwardly by a pneumatically driven rammer. The round pivots the deflector out of its path and is then locked in the barrel and fired. The recoil forces from the firing first overcome the forward momentum of the barrel and then drive the barrel rearwardly, during which time the expended cartridge is ejected rearwardly where it is deflected transversely through an ejection port by the deflector. Movement of the deflector caused by impact of the ejecting cartridge actuates the rammer to drive another round of ammunition forwardly into the barrel. A first round pulse and delay valve initially controls actuation of the rammer and the delayed release of the barrel from its sear in firing the first of a series of rounds.

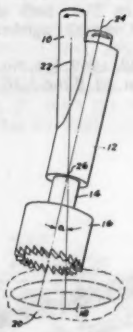
3,584,533
AUTOLOADING FIREARM OF THE BLOWBACK TYPE
Harold D. Allyn, 10 Sumner Ave., Springfield, Mass.
Filed Jan. 21, 1969, Ser. No. 792,694
Int. Cl. F41d *11/02*
U.S. Cl. 89—144 **5 Claims**

An autoloading firearm of the blowback type free of the usual trigger spring and sear spring and operative with only two springs, a recoil spring and a hammer spring, in the en-



tire unit not inclusive of an extractor spring and the inherent spring tension in a magazine catch.

3,584,534
DEVICE FOR DRIVING A HOLE CUTTER
Everett D. Hougen, G-5072 Corunna Road, Flint, Mich.
Filed Apr. 11, 1969, Ser. No. 815,296
Int. Cl. B23c *3/34;* **B23b** *41/04*
U.S. Cl. 90—14 **21 Claims**

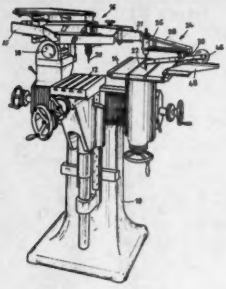


A drive unit for a hole cutter such as a hole saw having a housing in which a sleeve is journaled for rotation about a fixed axis. A shaft having a hole cutter at one end thereof is journaled in the sleeve for rotation about an axis inclined to the axis of the sleeve. The sleeve and shaft rotate at different speeds in the same or opposite directions so that the hole cutter rotates about its own central axis and simultaneously revolves about the axis of the sleeve at an acute angle.

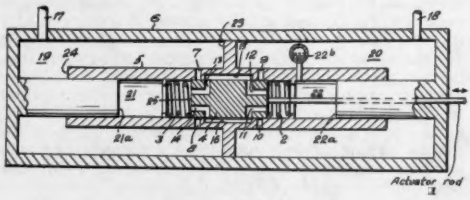
3,584,535
ATTACHMENT FOR A DUPLICATING MILLING MACHINE
Franz Rossberger, Munich, Germany, assignor to Friedrich Deckel Prazisions Mechanik & Maschinenbau, Munich, Germany
Filed Aug. 15, 1969, Ser. No. 850,497
Claims priority, application Austria, Aug. 19, 1968, A 8075/68
Int. Cl. B23c *1/16;* **B43l** *13/10*
U.S. Cl. 90—13.1 **10 Claims**

A cantilevered arm attachment for the tracing stylus bushing of a duplicating milling machine, with a tracing stylus adapted to move axially in one coordinate direction as it traces over the contoured surface of a three-dimensional pattern and pivot a lever arm to transfer the axial dimension movements in a selected reduction ration to the tracing stylus bushing and the cutting tool which is guided by it, by means of a cantilevered arm to which the lever arm is pivoted, whereby the tool cuts in a workpiece a relief style transformation of an ordinary three-dimensional pattern, which has dimensions in one coordinate direction, such as the vertical

dimensions, which are greatly reduced from the corresponding dimensions of the pattern while the transfer of dimensions in the other coordinate directions are uneffected by the attachment.



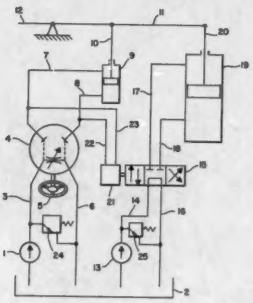
3,584,536
MULTIPLE AREA HYDRAULIC ACTUATOR
Benny M. Hillberry, West Lafayette, Ind.
Filed Jan. 13, 1971, Ser. No. 2,613
Int. Cl. F15b *11/02, 11/16*
U.S. Cl. 91—411R **8 Claims**



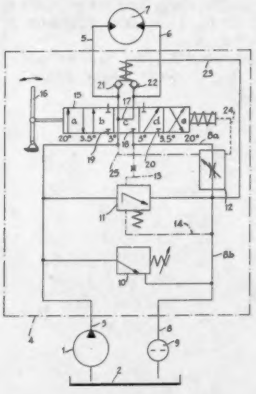
Two or more fluid motors of the expandable chamber type are connected to a source of pressurized fluid, and are cross-connected to one another through valving, such that the power delivering element operates rapidly with a low force in one direction, (positive force), until a high resistance is encountered. Then a valve shifts automatically to increase the positive force output while the power delivering element operates at a lower speed. Further, upon reversal of the motors, high-pressure and low-speed retraction occurs if a substantial positive load remains against the power delivering element. This results in nice slow precise control of the apparatus. However, if the positive load, upon retraction, falls to a low level, the valve again shifts, automatically, to cause rapid retraction, thereby automatically avoiding timewasting slow retraction. If a reverse (negative) load is encountered during the retraction stroke, then the valve automatically shifts between fast, low-force and slow, high-force positions to achieve desirable results similar to those set out above in regard to positive forces.

3,584,537
HYDROSTATIC STEERING SYSTEM
Burkhardt Schulz, Kellinghausen, Holstein, Germany, assignor to Danfoss A/S, Nordborg, Denmark
Filed May 26, 1969, Ser. No. 827,501
Claims priority, application Germany, Apr. 23, 1968, P 17 55 297.5
Int. Cl. F15b *11/16, 15/18*
U.S. Cl. 91—411 **4 Claims**

The invention relates to adding of auxiliary apparatus to a conventional or standard hydrostatic steering system of the type in which a steering wheel controlled metering device controls the application of pressurized fluid to hydraulic motor means which operates the rod system of the wheels to be steered. The auxiliary apparatus allows a conventional metering system of relatively small size and capacity to be utilized for heavier vehicles than a system of a particular size or capacity could otherwise be used for. The auxiliary apparatus includes a valve which is operable in response to the pressure differential across the motor ports of the meter of the conventional system to provide greater operating forces for turning the wheels of the vehicle.



3,584,538
HYDRAULIC SYSTEM WITH IMPROVED CHANGEOVER CONTROL UNIT
Alex Petersen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark
Filed Feb. 7, 1969, Ser. No. 797,468
Claims priority, application Germany, Feb. 9, 1968, P 16 28 119.9
Int. Cl. F15b *11/08, 13/04*
U.S. Cl. 91—421 **9 Claims**



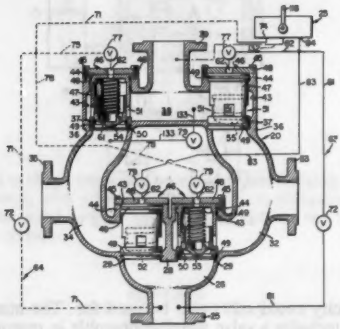
A hydraulic system in which the reversal of direction of a hydraulic motor therein is accomplished by a changeover control unit which comprises a four-way, changeover valve having changeover passages connecting the motor with a fluid pressure supply line and a discharge line. A restrictor provided for controlling flow in the discharge line is variably opened and closed in response to operation of the changeover valve. A metering valve in the control unit is responsive to pressure drops across the restrictor and operates to bypass supply fluid to the discharge line downstream of the restrictor to change over without damage to the system.

3,584,539

FLUID MOTOR CONTROL SYSTEM AND SUPPLY AND CONTROL VALVE THEREFOR

Harry Sugden, Jr., Statesboro, Ga., assignor to Emerson Electric Co., St. Louis, Mo.

Filed May 10, 1968, Ser. No. 728,295
Int. Cl. F15b 11/08, 13/042
U.S. Cl. 91—454 6 Claims



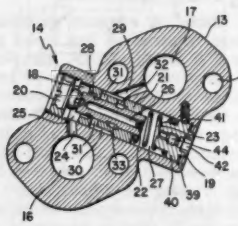
A fluid motor control system having a four-way fluid pressure responsive valve for determining the direction and rate of flow of the motive fluid in response to the positioning of a manually operable double poppet pilot valve selectively operable to controllably vent the downstream slide of selected inlet chamber and outlet chamber fluid pressure responsive valves to predetermine the direction and rate of flow of the motive fluid to the fluid motor.

3,584,540

HYDRAULIC SYSTEM HAVING BYPASS VALVE EFFECTIVE TO KEEP MOTOR SPEED OR PUMP OUTPUT CONSTANT

Alex Petersen, Sonderborg, and Helge Kajholm Christensen, Svenstrup, both of, Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Feb. 19, 1969, Ser. No. 800,436
Int. Cl. F15b 11/08, 13/042
U.S. Cl. 91—468 1 Claim



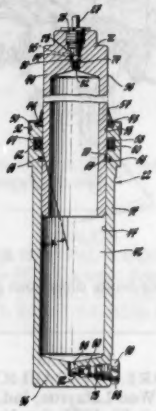
A bypass valve for use in a hydraulic system having a hydraulic motor or pump. The bypass valve shunts the motor or pump and connects the supply and discharge lines thereto and in response to pressure drops across the motor or pump bypasses fluid to keep the motor speed or pump output constant. The bypass valve compensates for motor or pump fluid leakage and keeps the sum of the quantity of fluid flow through the bypass valve and the leakage fluid constant. The bypass valve has a nonlinear characteristic curve determined by bypass orifices of varying dimensions controlled by a pressure-responsive axially movable slide.

3,584,541

LIFT CYLINDER ASSEMBLY

Gail M. Cunningham, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 25, 1969, Ser. No. 836,239
Int. Cl. F15b 11/08, 13/04
U.S. Cl. 91—468 4 Claims



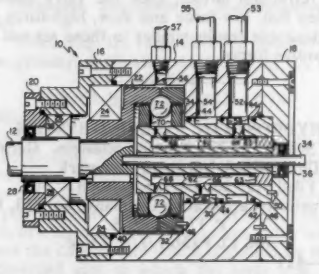
A lift cylinder assembly including a cylinder having a closed end and telescopically receiving an elongated piston having an axial passage therethrough. The cylinder comprises three serially arranged annular grooves in its inner surface, the outermost groove being located adjacent its open end. The outermost groove receives a scraper and wiper assembly, the intermediate groove receives a fluid seal assembly, and the most inwardly groove receives a locking ring engaging a mating annular groove on the outer surface of the piston locking it in a furthermost extended position. One of these mating locking grooves includes a camming ramp which upon the application of a sufficient force cams the locking ring out of engagement with the member possessing the camming ramp so that the piston may be retracted. Pressure fluid is supplied to the interior of the piston through a check valve located in the axial passage. The check valve controls flow into the piston so that fluid accumulates between the end of the piston and the cylinder closed end extending the piston in a regulated fashion. The check valve includes a valve seat member having a plurality of radially extending passages metering flow in a reverse direction so that retraction of the piston is also regulated.

3,584,542

MECHANICAL DRIVING

James M. Denker, Scituate, Mass., assignor to Nutron Corporation, Hingham, Mass.

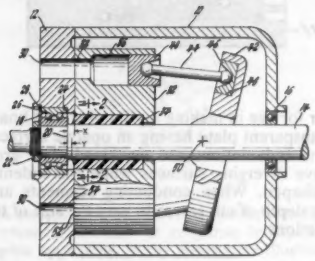
Filed July 22, 1969, Ser. No. 843,545
Int. Cl. F01b 1/06, 13/06
U.S. Cl. 91—498 16 Claims



A fixed member defining a first cam surface, a movable member defining a second cam surface, a movable piston

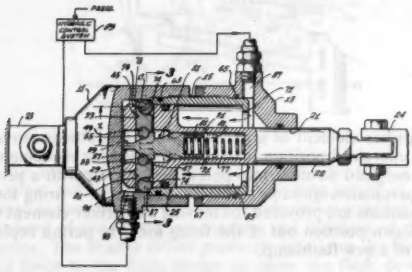
support carrying at least two pistons each of which is mounted for movement relative to the piston support and engages the cam surfaces, and means for selectively forcing the pistons against the cam surfaces to cause movement of the movable member and piston support relative to the fixed member.

3,584,543
ELASTIC HOLDDOWN MEMBER FOR THE CYLINDER BLOCK OF A FLUID PUMP/MOTOR
Stanley W. Herman, Indianapolis, Ind., assignor to General Motors Corportion, Detroit, Mich.
Filed Apr. 21, 1969, Ser. No. 817,901
Int. Cl. F04b *1/20*
U.S. Cl. 91—486 **3 Claims**



A solid resilient annular ring member is deformed by axial distortion or by compression between the drive shaft and the cylinder block of the pump/motor. The force resulting from the deformation holds the cylinder block against the pump/motor valving surface to provide a holddown force that counteracts lifting forces induced by the rotating masses of the pump/motor and by fluid forces between the cylinder block and the valving surface and provides an initial sealing force.

3,584,544
LOCKING MECHANISM
Robert W. Haberman, 33 Dapplegray Lane, Rolling Hills Estates, Calif. 90274
Filed July 22, 1968, Ser. No. 746,443
Int. Cl. F15b *15/26*
U.S. Cl. 92—24 **10 Claims**

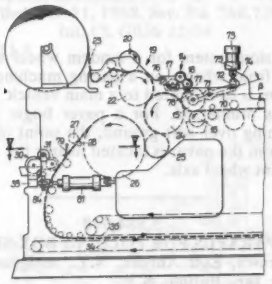


A locking mechanism within a housing defining a cylindrical chamber having a frustoconical stop surface projecting inwardly from the wall thereof. A hydraulic operator reciprocable in the chamber has an axial bore and at least a pair of roller-receiving slots extending radially outwardly from said bore, the outer ends of said slots being registered with the stop surface when the operator is in position to be locked relative to said housing. A pair of elongated, convexly curved rollers are movable into and out of said slots while disposed transversely to the axis of the operator to effect elongated line contact with the frustoconical stop surface to lock the operator. An actuator piston is reciprocable in the axial bore of the operator to position the locking rollers radially and includes a pair of oppositely disposed bearing surfaces which, in the locking position of the piston, register with the radially inner ends of said slots. Carrier segments reciprocate in the slots and carry the locking rollers at their outer ends and actuating rollers on their inner ends engaged by the bearing surfaces on the actuator piston.

ERRATUM

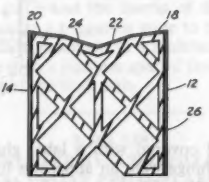
For Class 93—49 see:
Patent No. 3,584,548

3,584,545
CONTROL DEVICE
Gunter Ehlscheid, Niederbieber, Germany, assignor to Winkler & Dunnebier Maschinenfabrik und Eisengiesseri KG, Neuwied am Rhein, Germany
Filed June 17, 1969, Ser. No. 833,914
Claims priority, application Germany, June 20, 1968, P 17 61 661.4
Int. Cl. B31b *1/00*
U.S. Cl. 93—61 **9 Claims**



A control device for use in a machine adapted to carry out sequential operations upon articles is shown. The control device activates and disengages a plurality of operating elements and will cause sequential disengagement and activation of the various operating elements as the machine is deliberately started or shut down but will cause simultaneous disengagement of all operating elements if the machine is stopped by reason of malfunction or accident.

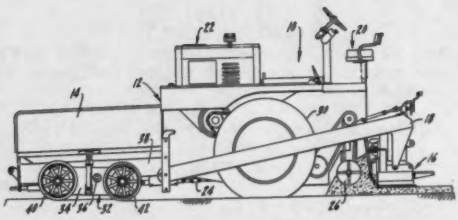
3,584,546
SPLICE COVERS FOR PREFORMED SEALS
Thomas C. Bowman, Buffalo, N.Y., assignor to Acme Highway Products Corporation, Buffalo, N.Y.
Filed Dec. 30, 1968, Ser. No. 787,827
Int. Cl. E01c *11/10*
U.S. Cl. 94—18 **10 Claims**



A splice cover comprising a sheathing having a top wall and sidewalls for covering one or more resilient compression seals. The cover can be provided with inturned flanges at the bottom thereof or a bottom wall completely enclosing the peripheral surface of the seals. The splice cover can have

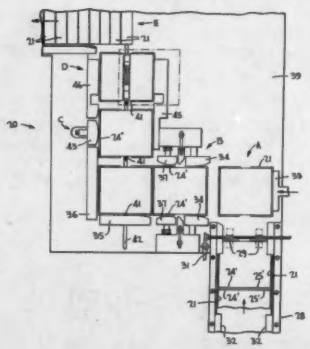
various angularly related legs joined together for splicing various shapes of seal joints. An adhesive is used to secure the splice cover onto the seal or seals.

3,584,547
BOGIE SUSPENSION SYSTEM
Donald R. Davin, Shelbyville, Ill., assignor to Blaw-Knox Company, Pittsburgh, Pa.
Filed Dec. 27, 1968, Ser. No. 787,484
Int. Cl. E01c *19/48*
U.S. Cl. 94—46 **5 Claims**



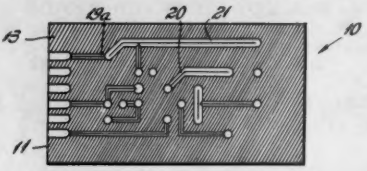
A suspension system for a tandem wheel system, such as the bogied front wheels on a paving machine, in which the wheel system is so mounted to a main vehicle that the rolling resistance is minimized. For a paver bogie having tandem wheels running over soft ground, the point of suspension of the bogie from the paver is located nearer the rear wheel axle than the front wheel axle.

3,584,548
APPARATUS FOR FOLDING BOX-SHELLS
John N. Brown, East Aurora, N.Y., assignor to F.N. Burt Company, Inc., Buffalo, N.Y.
Filed Jan. 12, 1970, Ser. No. 2,175
Int. Cl. B31b *1/26*
U.S. Cl. 93—49R **6 Claims**



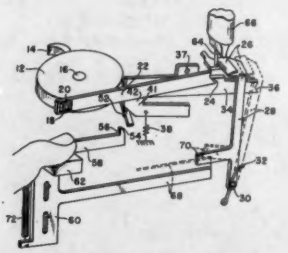
In a box-shell covered with a label glued to each of its walls except its hinge wall, an apparatus for folding the box-shell in a glue-wet condition so as to avoid any spring-back at the hinge wall after the box has been folded and the glue has been fully setup, the apparatus comprises means for conveying a plurality of such box-shells past automatic means which prepare the lower pan of each box-shell for nesting within its upper pan, toward a means for holding the hinge wall of each box-shell against movement during folding, and through a movable guide means for directing each folded box to a stacking station.

3,584,549
PRINTED CIRCUIT BOARD MASTER
Albert C. Leenhouts, Granby, Conn., assignor to The Superior Electric Company, Bristol, Conn.
Filed Dec. 26, 1968, Ser. No. 805,068
Int. Cl. G03
U.S. Cl. 95—1R **2 Claims**



A master for use in making a printed circuit board consisting of a transparent plate having an opaque surface in which grooves and indentations are machined. The grooves thus formed have diverging surfaces while the indentations are conically shaped. When conducting segments are desired, varying the depth of cut serves to vary the size of the grooves and indentations.

3,584,550
MECHANISMS FOR MOVING A STRIKER ELEMENT OUT OF THE FIRING LOCUS OF A PERCUSSION-IGNITABLE FLASHLAMP
Harold L. Malone, and Chester W. Michatek, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 14, 1968, Ser. No. 767,143
Int. Cl. G03b *9/70*
U.S. Cl. 95—11 **4 Claims**



A striker element of a photographic apparatus is movable to an energized position, and then released for movement to a deenergized position into percussion impact with a primer of a percussion-ignitable flashlamp located at a firing locus. Mechanisms are provided for moving the striker element to a withdrawn position out of the firing locus to permit replacement of a new flashlamp.

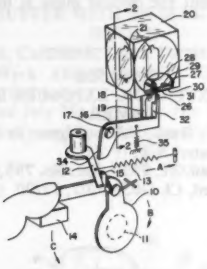
3,584,551
MECHANISM FOR RETAINING A PERCUSSION-IGNITABLE FLASHLAMP UNIT
James E. Dierks; Michael S. Montalto, and William H. Horton, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 14, 1968, Ser. No. 767,345
Int. Cl. G03b *15/03*, *9/70*
U.S. Cl. 95—11 **5 Claims**

For use in photographic apparatus, such as a camera, having a socket to receive a percussion-ignitable flashlamp unit and an actuating member movable into contact with a received flashlamp unit to effect percussive ignition thereof, a mechanism is provided for releasably retaining the received

flashlamp unit in the socket during percussive ignition of the unit.

In the illustrated embodiments, the socket includes a resiliently movable member engageable with a received flashlamp unit to yieldably hold the received unit in the socket, the retaining mechanism being movable into contact with the resiliently movable member to maintain the member in a position of engagement with the received flashlamp unit to thereby retain the unit in the socket.

In the preferred illustrated embodiment, the actuating



member is coupled to the retaining mechanism for simultaneous movement therewith in response to operation of the photographic apparatus. In the alternative illustrated embodiment, the actuating member is separately movable into contact with the received unit in response to movement of the retaining mechanism into contact with the resiliently movable member of the socket.

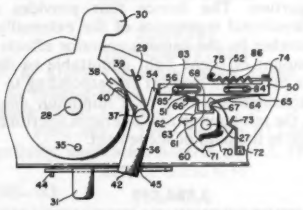
The retaining mechanism of this invention is equally adaptable for retaining, in a respectively suitable socket, a single-lamp flash unit or a multilamp flash unit.

3,584,552

AN INDEXING MECHANISM FOR A FLASH CAMERA

Michael S. Montalto; William H. Horton, and James E. Dierks, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 22, 1968, Ser. No. 731,058
Int. Cl. G03b *15/03*
U.S. Cl. 95—11 **7 Claims**



An indexing mechanism for a flash device in a photographic camera which utilizes the shutter driver as a coordinating member for effecting simultaneous winding of film, cocking of the shutter mechanism and indexing of the flash device. The shutter driver positively translates the film-winding force to the flash device to index the flash device and cock the driver. The driver then remains in its cocked position permitting further film-winding without further indexing. Upon release, the drive moves substantially independently of the indexing mechanism.

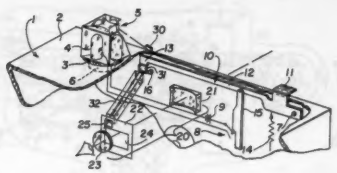
3,584,553

FLASHLAMP INDICATOR FOR CAMERAS

Donald M. Harvey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 6, 1968, Ser. No. 773,770
Int. Cl. G03b *17/20*
U.S. Cl. 95—11 **2 Claims**

A device for indicating the presence and used or unused condition of a flashlamp in a camera photoflash station by directing an image of the photoflash station into the field of vision through the camera viewfinder. An opaque member is moved into the light path from the photoflash station to the



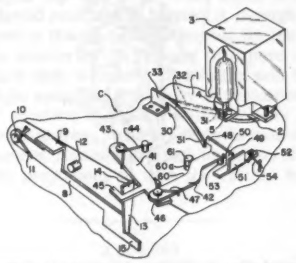
viewfinder during flashlamp firing so that the bright light from flash exposure does not reach the eye of a camera operator looking in the viewfinder.

3,584,554

APPARATUS FOR ACTUATING FIRING OF PERCUSSION-IGNITABLE FLASHLAMPS AND OPERATING MECHANISM THEREFOR

William T. Hochreiter, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 11, 1968, Ser. No. 766,739
Int. Cl. G03b *15/04*
U.S. Cl. 95—11.5 **3 Claims**



A spring member is mounted in a photographic apparatus in a manner such that, in its rest position, it supports a striker element at a location closely spaced to the firing locus for the primer of a percussion-ignitable flashlamp. An operating mechanism is responsive to a continuous movement of a shutter-release to energize and release the spring member creating sufficient inertia that the striker element moves into percussion impact with a flashlamp primer located at the firing locus. The striker element then returns quickly to the spaced location from the firing locus. In another embodiment restoring spring force and the inertia of the striker element propel the strike into a triggering zone to trigger release of a preloaded lamp firing element in a multilamp flash unit. The striker than returns to a position spaced from the trigger zone to allow indexing of the flash unit.

3,584,555

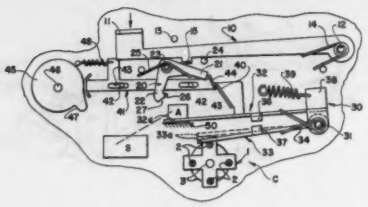
FIRING AND SHUTTER SYNCHRONIZATION FOR USE WITH PERCUSSIVE PHOTOFLASH SYSTEM

Richard J. Bresson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 11, 1968, Ser. No. 766,759
Int. Cl. G03b *9/70;* **F21k** *5/00*
U.S. Cl. 95—11.5 **3 Claims**

A striker unit is disclosed for use in the firing of percussion-ignitable photoflash lamps. During striking operation the unit actuates operation of a shutter and moves into percus-

sion contact with a flashlamp. One embodiment disclosed utilizes a two-part striker unit which provides for withdrawal



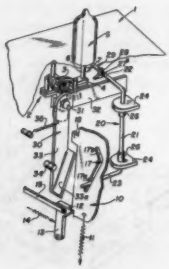
of the striker unit to a noninterfering position spaced from the lamp firing station.

3,584,556

TORSION STRIKING DEVICE FOR USE IN FIRING PERCUSSION-IGNITABLE PHOTOFLASH LAMPS

Donald M. Harvey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 11, 1968, Ser. No. 766,814
Int. Cl. G03b *9/70*
U.S. Cl. 95—11.5 **4 Claims**



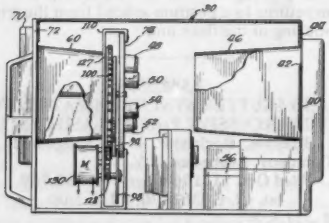
A striking device is disclosed for use in firing percussion-ignitable photoflashlamps, which device includes a torsion spring for biasing a striking means towards the flashlamp. Upon release of the striking means the torsional restoring forces of the spring move the striking means at high velocity into percussion-contact with a flashlamp so that the percussion energy is transmitted rapidly and therefore more reliability ignites the flashlamp.

3,584,557

EXPOSURE ASSEMBLY

Jacob S. Haller, and Hans J. Kist, both of Northbrook, Ill., assignors to Identification Development Corporation

Filed July 15, 1968, Ser. No. 744,923
Int. Cl. G03b *37/00*
U.S. Cl. 95—18 **9 Claims**



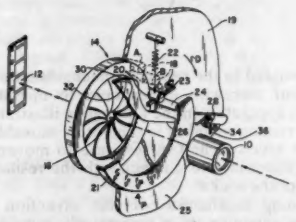
An exposure assembly for alternately effecting sequential or simultaneous split image exposures of a plurality of regions within a fixed area, exposure of each portion of a split image being effected through a separate lens. An optical mask, disposed between the lenses and the area to be exposed, is alternatively positionable either to allow sequential split image exposure of each region or to allow simultaneous split image exposure of all regions. Upon initiation of operation in the sequential mode, the optical mask automatically rotates after each region is exposed to allow for the exposure of the next region. Alternatively, in the simultaneous mode, the optical mask allows for simultaneous exposure of all regions, in which event the optical mask is not rotated after each exposure.

3,584,558

DEVICE FOR EXTENDING EXPOSURE RANGE OF A CAMERA

Donald O. Easterly, Rush, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 31, 1969, Ser. No. 795,467
Int. Cl. G03b *9/02, 11/00*
U.S. Cl. 95—64R **5 Claims**



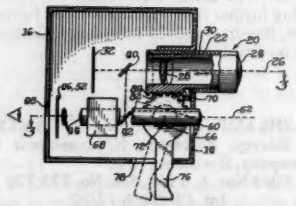
A device is provided to extend the exposure range of a camera, the camera having a diaphragm that is manually adjustable by an externally accessible control member to afford a plurality of aperture sizes. The device comprises a filter that is movable into the path of scene light when the diaphragm has been adjusted to its minimum-aperture condition. The filter is supported by a lever that is engaged by the externally accessible control member when the diaphragm is in its minimum-aperture condition for movement by the control member into the path of scene light to thereby attenuate said light and provide the equivalent of an even smaller diaphragm aperture. The device thus provides a means whereby unidirectional movement of the externally accessible control member by the camera operator effects a reduction in the amount of scene light admittable to film in the camera from a maximum amount corresponding to the maximum-size diaphragm aperture to a minimum amount corresponding to the minimum-size diaphragm aperture with the filter positioned in the path of scene light.

3,584,559

CONTINUOUS FOCUSING MECHANISM USING TRIANGULATION PRINCIPLE

Herman Levin, Glenview, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Nov. 29, 1968, Ser. No. 779,818
Int. Cl. G03b *3/00*
U.S. Cl. 95—44 **8 Claims**



A distance determining device operable on the principle of triangulation to focus a camera's objective lens at a focal

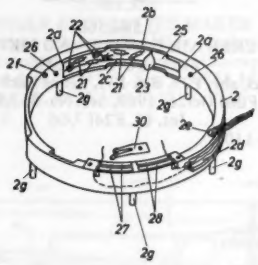
distance. Adjacent a composing screen for receiving the image of that lens, a focusing screen receives an image from an auxiliary lens. The latter lens is pivotable about an axis perpendicular to the optical axis so as to enable alignment of the base of a subject with a reference mark on the focusing screen and through a coupling to focus simultaneously the objective lens on that subject.

3,584,560

CAMERA SHUTTER WITH AN ELECTRONIC TIMING DEVICE

Hermann Schill, Calmbach, Black Forest, Germany, assignor to Prontor-Werk Alfred Gauthier, G.m.b.H., Calmbach Black Forest, Germany

Filed July 25, 1968, Ser. No. 747,711
Claims priority, application Germany, July 29, 1967, P 15 97 359.8
Int. Cl. G03b *9/08*
U.S. Cl. 95—53 **5 Claims**



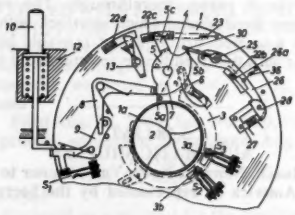
A camera shutter with a shutter housing and an electronic timing device in the shutter housing. The housing is formed by a base and a separate cylindrical housing wall mounted on the base. The housing wall has a recess extending in a circumferential direction and a conductor plate is mounted on the housing wall in the recess. The conductor plate has components of the electronic timing device thereon.

3,584,561

LENS SHUTTERS

Franz W. R. Starp, Calmbach, Black Forest, Germany, assignor to Prontor-Werk Alfred Gauthier G.m.b.H., Calmbach Black Forest, Germany

Filed Apr. 2, 1969, Ser. No. 812,651
Claims priority, application Austria, Apr. 3, 1968, A3254/68
Int. Cl. G03b *9/14*
U.S. Cl. 95—63 **10 Claims**



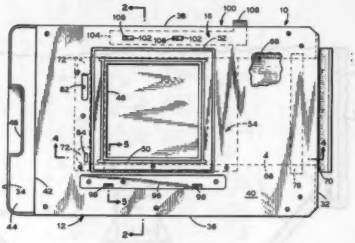
A photographic lens shutter is provided that has a first blade system movable to an open and closed position with a driving mechanism having a stop which locks its movement when the blades reach the open position. A second blade system is provided which acts as a diaphragm and has a driving mechanism with an electromagnetic locking device associated therewith for releasing the driving mechanism when actuated by an electronic timing device. A release member is provided on the driving mechanism of the second blade system which acts in the end phase of the movement thereof to disengage the stop of the first blade system.

3,584,562

PHOTOGRAPHIC FILM HOLDER

Kenneth R. Wisner, 263-A W. 12th St., New York, N.Y.

Filed Sept. 4, 1968, Ser. No. 757,394
Int. Cl. G03b *17/26*
U.S. Cl. 95—71 **6 Claims**



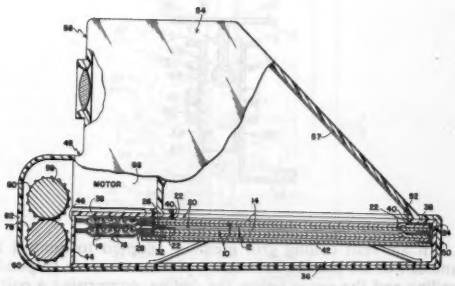
An accessory camera back for converting a conventional film type camera having a removable back to a camera which is adapted to take Polaroid pictures. An enclosed housing having a hinged top wall is provided which is adapted to receive a Polaroid pack of film therein. A through light aperture is received in the top plate to provide for the passage of light into the interior of the housing to expose the film. A removable dark slide is slidably received in said housing for closing the light aperture. A plurality of projection receiving openings are provided in the top wall which are adapted to receive projections from a camera body to mount the housing on the camera. Additionally, locking means are provided to engage the projections to lock the camera back to the camera.

3,584,563

PHOTOGRAPHIC PROCESSING APPARATUS

Richard J. Chen, Winchester, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

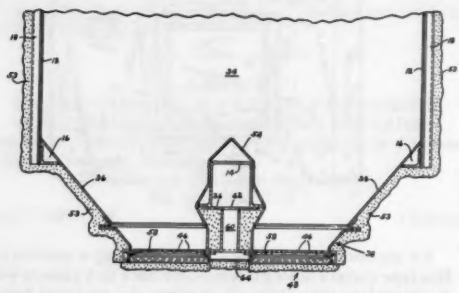
Filed June 21, 1968, Ser. No. 739,035
Int. Cl. G03d *9/02*
U.S. Cl. 95—89 **2 Claims**



A camera in which a viscous photographic processing liquid is distributed in a thin layer between an exposed photosensitive element and another element by moving the elements in superposition through a convergent passage between a pair of juxtaposed pressure-applying members biased toward one another by a substantially constant force. The viscosity of the liquid varies inversely with temperature

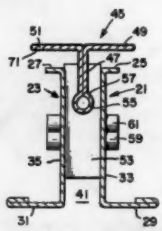
and the speed of movement of the elements by a battery powered motor is varied in direct relation to the ambient temperature to insure uniform liquid distribution by providing a battery whose power output is a function of temperature.

3,584,564
AERATING SYSTEM FOR A RAILWAY CAR
Dallas W. Rollins, St. Charles, Mo., assignor to ACF Industries Incorporated, New York, N.Y.
Filed Mar. 12, 1969, Ser. No. 806,452
Int. Cl. B61d *27/00*
U.S. Cl. 98—10 **4 Claims**



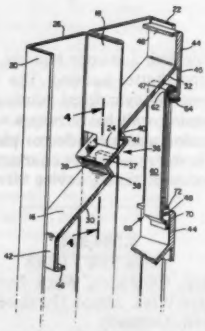
A system for aerating and controlling the temperature of ladings, such as potatoes or other perishable commodities, in a covered hopper railway car, includes a portion of the center sill, formed as an air duct, and connections between the center sill and perforated plates at the bottom of the hoppers. To complete the air circuit, there are also provided ducts at the top of the car connected to one side of an air blower, the other side of which is connected to the center sill.

3,584,565
AIR VENT CEILING GRID MEMBER
William R. Bush, Downington, Pa., assignor to Bundy Corporation, Detroit, Mich.
Filed Apr. 10, 1969, Ser. No. 814,976
Int. Cl. F24f *13/06*
U.S. Cl. 98—40 **7 Claims**



An air vent ceiling grid member adapted to control the amount of air passing between a plenum above a suspended ceiling and the space below the ceiling, comprising a pair of channels having upper and lower horizontal flanges connected together by a web and end panels extending at right angles from the web, said webs being spaced apart by the end panels to form an airspace between the webs, a pair of connectors joining the end panels of the channels together, a T-shaped control member positioned in the airspace and having a vertical fin with a pair of horizontal flanges extending outwardly from the top of the fin and adapted to seat on the top of the web upper flanges to close the air space, and a control mechanism for varying the position of the control member to vary the amount of air passing through the ceiling grid member. The control mechanism may comprise a control spacer attached to the fin of the control member with a pair of pins extending outwardly from each side into a pair of slanted slots formed in the channel web, with the slots having a series of notches for holding the pins in a desired position. Another control mechanism may comprise a control spacer attached to the fin of the control member, a cam pivotally attached to the webs and contacting the spacer, and a cam lever extending from the cam, whereby the cam lever may be manipulated to rotate the cam and raise and lower the control member to control the amount of air passing through the air space. Another control mechanism may comprise a control spacer attached to the fin of the control member and having a slanted top portion in contact with said slanted bottom portion and having a pair of bars extending outwardly therefrom, and a pair of horizontal slots formed in the channel webs for receiving said bars, whereby to control the amount of air passing through the airspace by moving the actuator member horizontally so that its slanted top portion raises and lowers the central spacer and control member.

3,584,566
LOUVERED AIR DAMPER AND METHOD OF PRODUCING SAME
Franics J. McCabe, P.O. Box 131, Penns Park, Pa.
Filed Oct. 6, 1969, Ser. No. 863,936
Int. Cl. F24f *7/00*
U.S. Cl. 98—110 **16 Claims**

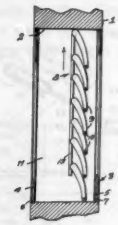


An air damper ventilator combines a fixed blade ventilator with means adaptable to check the flow of air or regulate the flow of air as it passes therethrough. The ventilator is fabricated from fixed blades which interlock with side channels to form a unified structure and movable blades which slide together with the fixed blades in articulated engagement therewith.

3,584,567
AUTOMATIC SHUTTER
Charles D. Roach, Newport News, Va., assignor to The United States of America as represented by the Secretary of the Army
Filed Nov. 12, 1969, Ser. No. 875,878
Int. Cl. F23l *13/00*
U.S. Cl. 98—119 **6 Claims**

An automatic shutter for use in a window in a pressurized cabin of an aircraft for preventing rapid decompression of the cabin in event of rupture of one or more of its windows. The shutter is of the louvered type, the louvers being hinged at their trailing edges which are lower than their leading edges, and connected at their forward edge by a link. Upon

window breakage the inside air pressure builds up a lift under the louvers' lower side to rotate them to a closed position



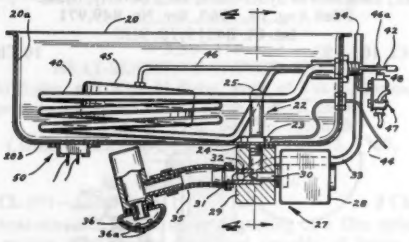
and then keep them in the closed position as long as air pressure exists in the cabin.

3,584,568

SINGLE UNIT COFFEE MAKER

Leonard P. Hausam, Minneapolis, Minn., assignor to Charter Design and Manufacturing Company, Minneapolis, Minn.

Filed June 20, 1969, Ser. No. 835,159
Int. Cl. A23f *1/08*; A47j *31/047*
U.S. Cl. 99—282 **6 Claims**



A coffee brewing unit providing a heating tank arranged for holding a quantity of water during heating and including control means for, after heating the water to a predetermined temperature, releasing the same over a measured amount of ground coffee with the releasing means including siphoning means for completely draining the tank with air relief means for draining the flow lines to the spray head and including automatic reset devices to prepare the unit for the next amount of water and the next brewing heating, cycle.

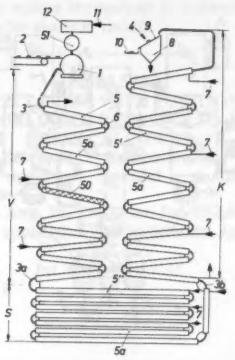
3,584,569

APPARATUS FOR THE STERILIZATION OF FILLED PACKAGES HAVING PRESSURE SENSITIVE CLOSURES AND FILLED WITH MATERIAL, ESPECIALLY FOODSTUFFS OR CONDIMENTS OR THE LIKE

Werner Wieser, Kreuzlingen; Peter Haerry, Konolfingen; Josef Stocker, Konolfingen, and Ivo Hauser, Munsingen, all of, Switzerland, assignors to Ursina A. G., Konolfingen, Switzerland

Filed Aug. 14, 1969, Ser. No. 850,016
Claims priority, application Switzerland, Aug. 14, 1968, 12,216/68
Int. Cl. A23l *3/02*
U.S. Cl. 99—361 **27 Claims**

There is disclosed an apparatus for the sterilization of filled packages equipped with pressure-sensitive closures and filled with materials, especially foodstuffs and semiluxurious products such as condiments or the like, which comprises feed channel means provided with infeed or inlet means and discharge means. The feed channel means pass through a preheating zone, a sterilization zone and a cooling zone. A fluid medium serves as the energy transfer agent for conveying the packages through the feed channel means. The infeed means and discharge means are situated at a greater height than said sterilization zone of the feed channel means. According to an important aspect of the invention, the preheating zone and cooling zone are also situated at a greater height than the sterilization zone, with said feed channel means at said preheating zone and cooling zone possessing a greater slope than at said sterilization zone. Further, energy transmission means are provided at the feed channel means at least along the greatest portion of such feed channel means. The feed channel means at the lowest region of the preheating zone and cooling zone, respectively, merging with the sterilization zone. Moreover, the system operates such that the pressure of the fluid medium in the feed channel means at least from the infeed means up to the region of the cooling zone corresponding to the infeed temperature is greater than the internal pressure of the package.

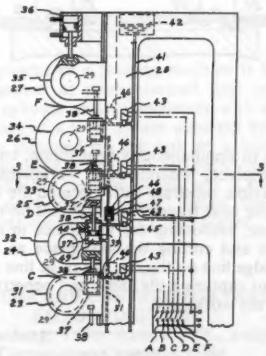


3,584,570

CALENDER ROLL LIFTING MECHANISM

Hans G. Sass, Krefeld; Jurgen Schlunke, Krefeld; Heinz Boixen, Huls, and Friedrich Kurz, Willich, all of, Germany, assignors to Joh. Kleinewefers Sons, Krefeld, Germany

Filed Nov. 21, 1969, Ser. No. 878,857
Claims priority, application Germany, Nov. 27, 1968, P 18 11 214.6
Int. Cl. B30b *3/04*
U.S. Cl. 100—163 **11 Claims**



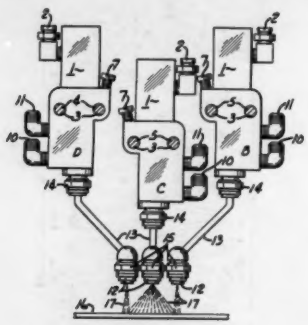
A roll lifting mechanism for a multiple roll calender stack or the like is adjusted automatically to compensate for changes in roll diameter resulting from wear or roll replacement so that predetermined spacing is maintained between the calender rolls when the latter are lifted out of contact with one another.

3,584,571

CHARACTER GENERATION MARKING DEVICE

Ronald H. Schmoll, Broadview Heights, Ohio, assignor to The Pannier Corporation

Filed Aug. 25, 1967, Ser. No. 663,399
Int. Cl. B41f 3/02; G01d 15/18
U.S. Cl. 101—1 10 Claims



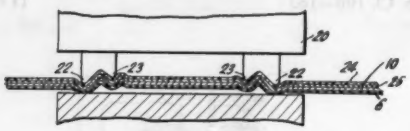
A method of and apparatus for character generation marking wherein a plurality of liquid spray nozzles, each adapted to spray a line segment on the object to be marked, are cooperatively arranged with respect to one another to spray a segmented character on the object when they are selectively actuated. An electrical character selection circuit is provided to selectively actuate the desired combination of nozzles to generate the corresponding segmented character.

3,584,572

METHOD, APPARATUS AND DIE ADAPTED TO SIMULTANEOUSLY HEAT STAMP, EMBOSS AND CUT

Anthony Apicella, 39 Oaktree Lane, Levittown, N.Y.

Filed Feb. 19, 1968, Ser. No. 706,318
Int. Cl. B44b 5/00, 5/02
U.S. Cl. 101—24 19 Claims



Apparatus to simultaneously heat stamp, emboss and cut a flexible workpiece, wherein the workpiece is impressed through a flexible substrate with a heated die with an intaglio design, the die heat transferring material on the substrate to the workpiece, embossing the workpiece in relief of the intaglio design and cutting the workpiece as defined by the peripheral ridge line on the die, the ridge line flexing the substrate without rupturing the same and penetrating the workpiece to cut the workpiece.

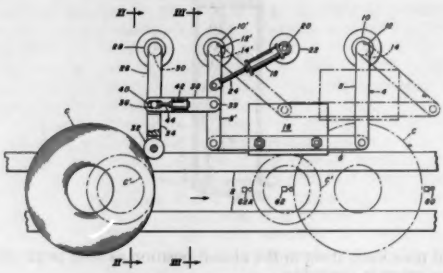
3,584,573

APPARATUS FOR MARKING A MOVING HOT COIL

Alfred Teplitz, Pittsburgh, Pa., assignor to United States Steel Corporation

Filed Oct. 9, 1968, Ser. No. 766,193
Int. Cl. B41f 17/06, 33/04
U.S. Cl. 101—35 5 Claims

Apparatus for marking a hot coil as it travels on a conveyor including a pivotally movable parallelogram structure having one link parallel to the conveyor supporting a marking device, means for sensing the approach of a coil to be marked, means operable by the sensing means to position the marking device at the optimum distance for the mark, means for initiating operation of the marking device, and means for retracting the marking device and its supporting link to a remote position to await the next coil.

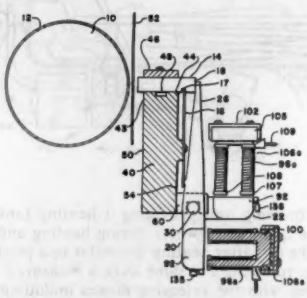


3,584,574

HAMMER MODULE FOR HIGH-SPEED LINE PRINTER

Byron D. Smith, Boxford, Mass., and Robert Hermann, Rye, N.H., assignors to Syner-Data, Inc., Beverly, Mass.

Filed Aug. 14, 1969, Ser. No. 849,971
Int. Cl. B41j 9/10, 9/38
U.S. Cl. 101—93 10 Claims



For line printers of the type wherein a web of paper is imprinted by impact by a line of hammers on one side of the sheet which drives the paper against selected ones of type faces driven rapidly and continuously past the printing line behind the web, a simplified hammer module is disclosed. The module embodies so-called free-flight hammers which are thrown against the web by electromagnetic actuators. The hammers are guided by simple rounded grooves in which they rest. Simple mild steel actuator arms are shown to have necessary mechanical an d magnetic properties to link electromagnets and hammers. Electromagnets are arranged in two rows whereby alternate hammers are thrown by straight and offset actuator arms, achieving a module for 80 hammers with pica spacing all of which is below the print line for quick reading accessibility.

3,584,575

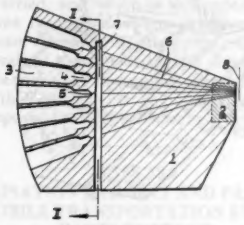
MOSAIC PRINTING HEAD AND DEVICE FOR PRODUCING THE SAME

Johann Distl, Hindenburgstrasse 32, Garmisch-Partenkirchen, Germany

Filed Nov. 12, 1968, Ser. No. 774,844
Int. Cl. B41j 1/18, 3/10
U.S. Cl. 101—109 3 Claims

A printing head for raster or mosaic-type printing is composed of a block and a mouthpiece; both consisting of

synthetic plastic, which are joined with each other. The block and mouthpiece guide individual printing wires along their entire length up to the exit plane of the mouthpiece. The spreading of the wires at the block side remote from the mouthpiece corresponds to the diameter of the respective electromagnetic drives used for operating the wires. In the mouthpiece the printing wires form with each other respective angles amounting to approximately one-half of the spreading angle obtaining between the driving members and the mouthpiece. The spacing between the printing wires in the exit plane of the mouthpiece is such that the wires touch each other only when they reach the printing plane. The guide channels for the printing wires extend between the electromagnetic drives and the mouthpiece on a curved path corresponding to the free bending line of the printing wires.



3,584,576

HEAT-SENSITIVE STENCIL SHEET

Keishi Kubo, and Kiyoshi Sakai, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Aug. 19, 1968, Ser. No. 753,696
Claims priority, application Japan, Aug. 25, 1967, 42/54212
Int. Cl. B41n *1/24, 15/00*
U.S. Cl. 101—128.2 **2 Claims**

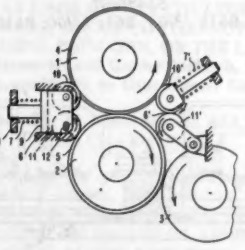
A heat-sensitive stencil sheet consisting of a film adhered to a porous thin fibrous sheet and capable of being perforated by exposure to infrared rays, said film consisting essentially of at least 75 percent by weight of a chlorinated polyvinyl chloride resin having at least 20 percent by weight of recurring 1,1-dichloroethylene units, not more than above 7 percent by weight of recurring 1,1-dichloroethylene units and the balance being polyvinyl chloride units.

3,584,577

ROTARY PRINTING CYLINDERS HAVING ENGAGED FRICTION ROLLERS TO DAMPEN VIBRATION

Willi Jeschke, Heidelberg, Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany

Filed June 5, 1969, Ser. No. 830,758
Claims priority, application Germany, June 8, 1968, P 17 61 568.8
Int. Cl. B41f *13/20*
U.S. Cl. 101—218 **7 Claims**



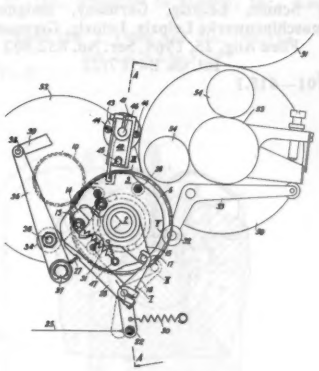
Rotary printing press includes a pair of parallel shafts surmounted respectively by a plate cylinder and a blanket cylinder, at least one travel ring acting as a Schmitz ring carried by each of the shafts and having a diameter equal at most to the diameter of the cylinder mounted on the respective shaft, at least one transmission located between the shafts and comprising two mutually peripherally engaging friction wheels, the friction wheels also peripherally engaging the travel ring respectively on the shaft adjacent thereto, the friction rollers being adjustably mounted so that frictional contact between the respective rollers and the travel rings and between the rollers themselves is maintained when the spacing between the shafts is varied.

3,584,578

ROTARY OFFSET PRESS WITH POSITION CONTROL OF OFFSET CYLINDER RELATIVE TO ADJACENT PRESS CYLINDERS

Josef Jurny, Sebranice, Czechoslovakia, assignor to Adamovske strojirny narodni podnik, Adamov, Czechoslovakia

Filed Aug. 25, 1969, Ser. No. 852,622
Claims priority application Czechoslovakia, Aug. 27, 1968, 6087-68
Int. Cl. B41f *13/36*
U.S. Cl. 101—218 **4 Claims**



The offset cylinder of a printing machine is brought into pressure engagement at predetermined time intervals first with the form cylinder and subsequently with the pressure cylinder by means of a lever system actuated by a cam disc freely rotatably mounted on the hub of a toothed driven wheel, with pawl means caring for temporary connection of the cam disc with the toothed wheel, with a two-arm lever controlling the position of said pawl means, the position of said two-arm lever controlled by a control lever.

3,584,579

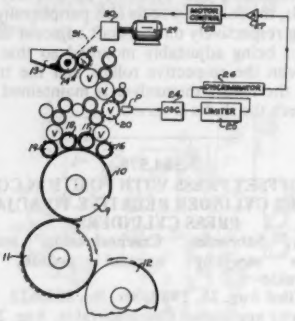
SENSING PROBE AND CONTROL FOR PRESS INKER EMBODYING SAME

Nathaniel Rothenberg, Valley Stream, N.Y., assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed Dec. 3, 1968, Ser. No. 780,798
Int. Cl. B41f *31/00;* **G01r** *27/26*
U.S. Cl. 101—350 **13 Claims**

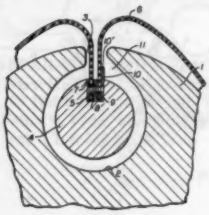
Sensing probe for capacitively sensing the thickness of an ink film being transferred by a printing press inker. The probe has an inductive probe element which is insensitive to the ink film and which offsets changes in the probe's capacitive response due to machine vibrations, so that the overall

response of the probe is substantially insensitive to such vibrations. The probe is part of a control for automatically



regulating the rate at which ink is being transferred by the inker.

3,584,580
RUBBER SHEET TENSIONING DEVICE FOR OFFSET PRINTING MACHINES
Wolfgang Schulz, Leipzig, Germany, assignor to Veb Druckmaschinenwerke Leipzig, Leipzig, Germany
Filed Aug. 25, 1969, Ser. No. 852,802
Int. Cl. B41f *7/22*
U.S. Cl. 101—415.1 **2 Claims**



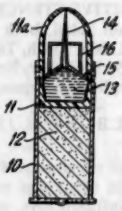
A rubber-blanket clamping device for offset printing presses, which comprises a rubber-blanket cylinder and a rotatable and lockable clamping shaft which has a continuous longitudinal groove. The clamping shaft is disposed in a recess which has a longitudinal slot and extends parallel to the axis of the rubber-blanket cylinder. The clamping shaft receives both ends of the rubber-blanket equipped with reinforcing strips. The latter are clamped in the longitudinal groove upon rotation and arresting the clamping shaft. The width of three of the metal strips gripping the ends of the rubber-blanket are equal with the depth of the groove, and a fourth front metal strip, viewed in the direction of rotation of the clamping shaft, is wider by the distance between the clamping shaft surfaces and the wall of a cylindrical bore defining the recess.

3,584,581
SPIN LAUNCH RECTANGULAR-TYPE CANISTER
Abraham Flatau, Joppa; Donald N. Olson, Lutherville, and Miles C. Miller, Joppa, all of, Md., assignors to The United States of America as represented by the Secretary of the Army
Filed Aug. 6, 1969, Ser. No. 847,907
Int. Cl. F42b *25/02*
U.S. Cl. 102—4 **12 Claims**

An aircraft dispersion munition and method for dispersing submunitions over a large area and with a ground pattern that is uniform and predictable; the munition utilizing canted vanes to produce a sufficiently high rotational value of the falling munition to spin launch a plurality of submunitions by means of centrifugal force and high tangential velocity, after

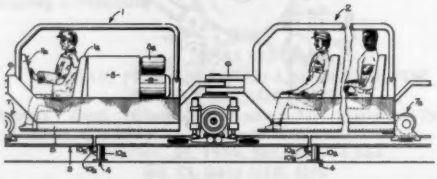
the bottom and sides of the munition have been removed during fall. A parachute is ejected during the fall of the munition to stabilize the falling and rotating munition.

3,584,582
HYPODERMIC PROJECTILE
Conrad Muller, 158 Eva Drive, Lido, N.Y.
Filed Sept. 12, 1968, Ser. No. 759,342
Int. Cl. F42b *5/12*
U.S. Cl. 102—92 **4 Claims**



A cartridge is composed of a casing which houses a detonating charge and of a bullet body inserted thereinto having an outer hollow portion made of a ductile material such as plastic, zinc, lead, rubber or the like to be compressed upon reaching a target. An upstanding hypodermic needle and a hypodermic medium are arranged within said hollow bullet body and upon impact upon a target the needle penetrates through the wall thereof into the target and carries hypodermic medium thereinto.

3,584,583
MONORAIL TRAIN
Dennis Charles Cartwright, Nottingham, England, assignor to Becorit (G.B.) Limited, Nottingham, England
Filed Nov. 25, 1968, Ser. No. 778,472
Claims priority, application Great Britain, Nov. 24, 1967, 53480/67
Int. Cl. B61b *13/04*; B61c *13/00*; B61f *3/12*
U.S. Cl. 105—4 **10 Claims**



This invention relates to a locomotive adapted to run on a ground mounted monorail track composed of rail elements of

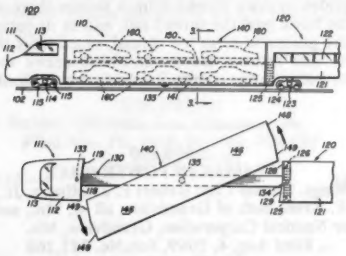
channel shape in cross section arranged with the mouths of the channels presented inwardly, the locomotive being supported upon bogies at opposite ends, at least one of which includes a pair of large diameter driving wheels engaging the upwardly presented faces of the horizontal flanges of the rail elements, two pairs of counterpressure wheels situated fore-and-aft of the driving wheels, and of a diameter to be contained within the channels presented by the rail elements of the track, and a beam element on which the counterpressure wheels are carried, and which is suspended by contractable hydraulic rams from a mounting member for the driving wheel, the beam element carrying guide or stabilizing wheels at opposite ends of a diameter slightly less than the horizontal distance between the inwardly presented faces of the vertical webs of the rail elements, and adapted to engage respectively with opposed faces of these webs.

3,584,584

COMBINATION RAILWAY AND PASSENGER AUTOMOBILE TRANSPORTATION SYSTEM AND PARTS THEREOF

Veljko Milenkovic, Boulder, Colo., assignor to General American Transportation Corporation, Chicago, Ill.

Filed May 8, 1968, Ser. No. 727,602
Int. Cl. B61d *3/02*
U.S. Cl. 105—368 **12 Claims**



There is disclosed a combination railway and passenger automobile transportation system comprising a stretch of railway track on which is disposed a train including a railway car having an underframe and a body; the body is double-decked and has a width to carry automobiles thereon disposed longitudinally and is pivotal upon the underframe into a loading position; a loading area is provided including two double-decked platforms along the track having ramps that cooperate with the ends of the decks on the body when in its loading position at a transfer position so that the automobiles may be run thereonto and therefrom; at the transfer position there is provided structure for centering the car and for turning the body; several coupling structures are disclosed to permit the train to be broken into a front unit, intermediate units and a rear unit.

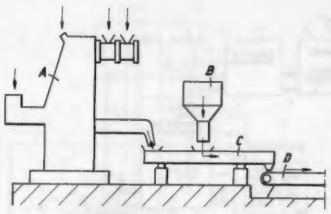
3,584,585

ARRANGEMENT FOR SELECTIVE PRODUCTION OF SWEETS, AS KROKANT- OR COULEUR-MASSES, SUGAR-NUT-BARS, SUGAR-COATED NUTS, ALMONDS, RAISINS, POP-CORN, OR THE LIKE

Otto Hansel, Hannover, and Gunter Niebisch, Bemerode, both of, Germany, assignors to Otto Hansel GmbH, Hanover, Germany

Filed Aug. 26, 1969, Ser. No. 853,131
Int. Cl. A23g *3/02*
U.S. Cl. 107—4 **6 Claims**

An arrangement for the selective production of sweets, as krokant or coloring masses, sugar-nut-bars, sugar-covered bars, almonds, popcorn, raisins or the like, which comprises a raw material working- and dosaging-set, a device for continuous melting of crystal- or other sugar masses, and a cooling- and delivery-device for the finished products. A krokant set, a coloring set, a bar set and a covering set for nuts, almonds, popcorn, raisins or the like are selectively operatively connected between the raw material working- and dosaging-set and the melting device, on the one hand, and the cooling- and delivery-device, on the other hand. Each of the intermediate sets comprises a treating chamber with transportation- and working-tools operating in the treating chamber, and the latter has feeding positions separated from each other for the masses to be worked.

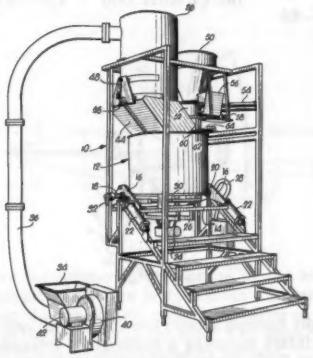


3,584,586

AUTOMATIC FOOD PROCESSING MACHINE AND METHOD

Charles G. Manley, Mission Hills; John R. Hopkins, Kansas City; George C. Andreopoulos, Leawood; Richard A. Braeking, Gladstone, and Francis Leo Lomaglio, Kansas City, all of, Mo., assignors to Manley, Inc., Kansas City, Mo.

Filed Jan. 2, 1969, Ser. No. 788,373
Int. Cl. A23g *3/20*
U.S. Cl. 167—7 **18 Claims**



Through use of a single vessel, the initial steps of cooking, addition and blending of certain ingredients are temperature controlled to prepare a first cooked product, whereas the subsequent steps of adding and blending a second food product with the cooked admixture is time controlled to automatically produce successive batches of the end product in continuous cycles.

3,584,587

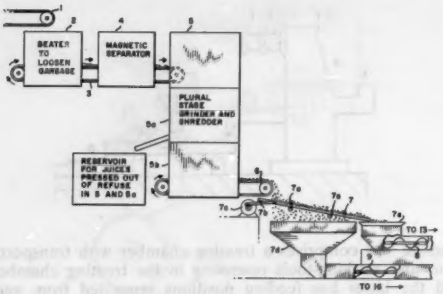
GARBAGE DISPOSAL SYSTEM

Gianni Siracusa, 100 Mary Way, Los Gatos, Calif.

Continuation-in-part of application Ser. No. 674,845, Oct. 12, 1967, now Patent No. 3,473,494. This application Oct. 20, 1969, Ser. No. 867,835
Int. Cl. F23g *5/12*
U.S. Cl. 110—8 **7 Claims**

An apparatus and method for disposing of garbage and similar refuse by reducing it to pieces of small size to facilitate burning. The reduced refuse is conveyed into an incinerator which has been heated to a predetermined temperature at which the reduced refuse supports combustion. Burners and air supply duct are provided to a side near the

bottom of the incinerator so that a whirling and cyclonic motion is imparted to the shredded refuse as it is reduced by complete burning thereof. The ashes and slag resulting from


BEATER TO LOOSEN GARBAGE
MAGNETIC SEPARATOR
PLURAL STAGE GRINDER AND SHREDDER
RESERVOIR FOR JUICES PRESSED OUT OF REFUSE IN 5 AND 5a
TO 13
TO 16

the burning of the reduced refuse drops into the conveyor housing in the bottom of the incinerator and a conveyor moves them to a suitable storage space.

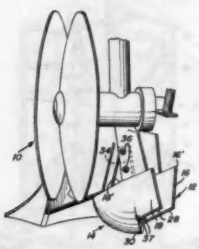
ERRATUM

For Class 110—14 see:
Patent No. 3,584,609

3,584,588
CORN LISTER SEED ORIENTER

Lorenz W. Schultheiss, 415 E. 12th, Cozad, Nebr.

Filed Apr. 10, 1968, Ser. No. 720,085
Int. Cl. A01c *5/06*
U.S. Cl. 111—86 7 Claims



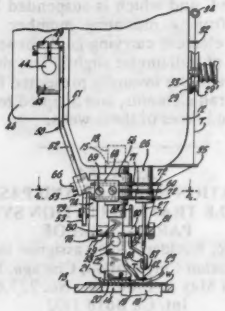
An upwardly opening groove forming runner unit and seed orienter for listers including a horizontally disposed wedge-shaped hollow body having forwardly and downwardly convergent upstanding opposite sidewalls inclined upwardly and outwardly approximately 10° relative to a vertical plane extending longitudinally of the body and approximately 5° to 7° rearwardly and outwardly relative to a center vertical plane. The lower marginal edge portions of the sidewalls include front and rear end portions and the front end portions are joined together and curve smoothly forwardly and upwardly toward a juncture established between the forward ends of the upper marginal edge portions of the sidewalls while the rear end portions of the lower marginal edge portions of the sidewalls are spaced above the lowermost extremities of the forward lower marginal edge portions and are spaced apart and generally parallel each other defining a seed discharge throat therebetween.

3,584,589
THREAD TRIMMER

Anthony Pirrello, Kearny, N.J., assignor to Clinton Industries, Inc., Hackensack, N.J.

Filed Jan. 27, 1970, Ser. No. 6,105
Int. Cl. D05b *65/00, 47/04*
U.S. Cl. 112—252 15 Claims

A sewing machine automatic thread cutter comprises a detachable cutting edge positioned along the top border of the sewing machine foot piece slot, a thread pulling assembly positioned between the sewing machine thread tensioner and sewing needle and including a stationary thread guide flanked by a pair of movable thread guides, and a transversely movable hook for engaging the thread depending from the needle and drawing it across the cutting edge. An actuating rod is reciprocated by a solenoid and in its advance stroke

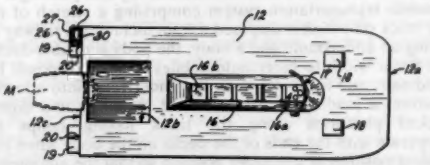


releases the thread tensioner and advances the movable thread guides to draw thread from a source thereof and advances the hook past the thread tail, and in its return stroke returns the guides to relax the thread, reactivates the thread tensioner, and returns the hook which draws the thread across the cutting edge shortly following the tensioning of the thread.

3,584,590
CATAMARAN POWER BOAT

Paul A. Rings, Kansas City; Robert P. Kauffman, Jr., and Edward F. Kroll, both of Grandview, all of, Mo., assignors to Skipper Nautical Corporation, Grandview, Mo.

Filed Aug. 4, 1969, Ser. No. 847,268
Int. Cl. B63b *1/22*
U.S. Cl. 114—66.5 10 Claims



A catamaran power boat has two spaced apart hulls interconnected by a substantially flat deck. Straddle-type pedestal seating is provided along the fore and aft center line of the deck with a handlebar-type steering mechanism located at the forward portion of the seating facility.

Each hull has a substantially vertical step located approximately one-third of the distance from the aft portion of same. Hydraulic controls operate trim tabs to help the vessel regain a planing attitude during the various stages of the operation thereof.

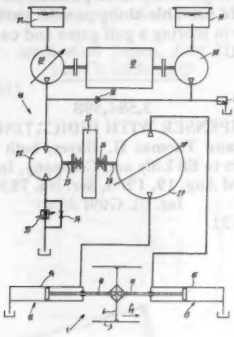
3,584,591
DEVICE FOR STABILIZING THE TRIM OF A FLOATING OBJECT

Gilbert Fournier, Le Havre, France, assignor to Ateliers Et Chantiers Du Havre Duchesne & Bassiere Et Augustin Normand Reunis, Le Havre Seine-Martime, France

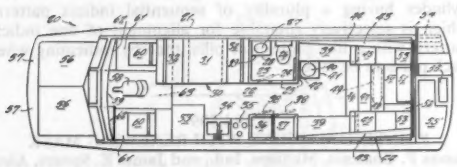
Filed Apr. 28, 1969, Ser. No. 819,746
Claims priority, application France, Oct. 21, 1968, 170,710
Int. Cl. B63b *43/06*
U.S. Cl. 114—125 5 Claims

The device for stabilizing the trim of a floating object comprises a mass of liquid contained in an enclosure inside of

which is guided a piston associated with a jack, an installation comprising a variable delivery pump and a forcing pump for supplying a hydraulic motor whose output shaft is coupled up beyond an inertia flywheel to the driving shaft of a variable delivery pump supplying said jack, the pump being servo-controlled by the disturbing torque undergone by the floating object.



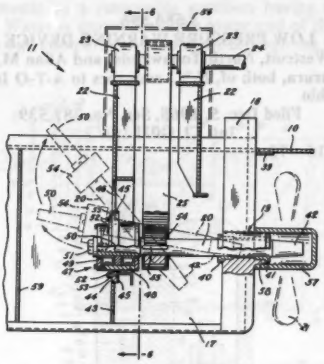
3,584,592
YACHTCAR
Albert D. Perrine, 543 Ohio Ave., Glassport, Pa.
Filed Nov. 18, 1968, Ser. No. 776,679
Int. Cl. B63f *3/00*
U.S. Cl. 115—1 **15 Claims**



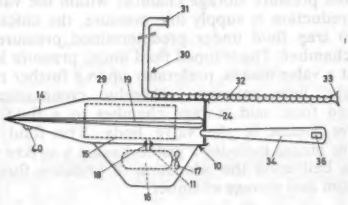
An amphibious vehicle for movement upon land or upon a water surface, the device including a hull supported upon a plurality of wheels, the hull carrying a pair of propeller assemblies at its lower rear, the hull containing two motors for selectively driving the propeller assemblies or the wheels, and the wheels and propellers being selectively retractable into the hull when not in use.

3,584,593
MARINE POWER POD
Luther H. Blount, 461 Water St., Warren, R.I. 02885
Filed May 19, 1969, Ser. No. 825,572
Int. Cl. B63h *23/34*
U.S. Cl. 115—34 **14 Claims**

The device comprises a power pod or enclosure housing a marine drive. The pod comprises a streamlined housing extending directly from the hull of the ship. This houses either a single or a double prop drive. In the double prop drive, the props are positioned both fore and aft of the pod. The props are driven by short shafts extending into the pod and supported by suitable bearings. Each shaft is driven by a gear belt drive from the hull just above the pod. The power supply is adjacent this point. This materially reduces the length of the drive shaft and thus reduces noise and vibration. Furthermore, after the prop is removed, a boot can be placed over the outside of the shaft and bearing, allowing the shaft and associated bearings and drive mechanism to be withdrawn into the hull directly from the pod. Repairs and adjustments can be quickly and easily be made inboard. The drive can thus be repaired, adjusted, or otherwise reached from the inside of the hull and even while the ship is in motion.

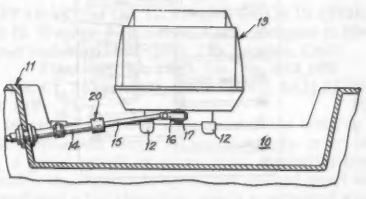


3,584,594
SELF-PROPELLED SUBMARINED DEVICE
Pierre Poutout, 41, Rue du Havt-Charlin, 33, Merignac, France
Filed Mar. 6, 1969, Ser. No. 804,761
Claims priority, application France, Apr. 19, 1968, 148,619
Int. Cl. B63h *21/26*
U.S. Cl. 115—6.1 **7 Claims**



A device for submarine exploration of the self-propelled type. It comprises a hollow body housing a battery means for feeding one or more electric motors with arms or shafts being provided at the rear part of the body. The arms or shafts can be gripped by a diver drawn along by traction.

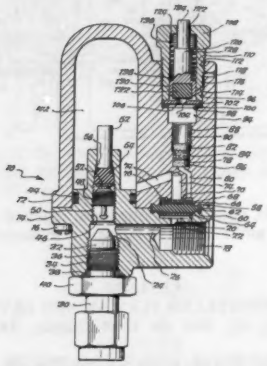
3,584,595
OUTBOARD MOTOR STEERING BRAKE
Bernard Joseph Perry, Jr., 1080 Montgomery St., Manchester, N.H., and Richard Francis Wadleigh, Jr., P.O. Box 188, Winnesquam, N.H.
Filed July 31, 1969, Ser. No. 846,325
Int. Cl. B63h *21/26*
U.S. Cl. 115—18 **3 Claims**



This disclosure relates to an outboard motor accessory which virtually eliminates any so-called "play" between the

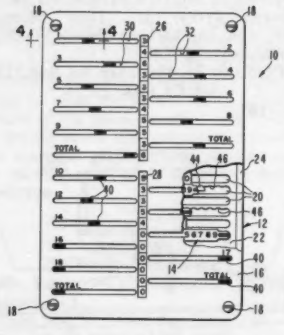
motor and its remotely located steering linkage. This accessory is generally in the nature of an adjustable sleeve which is peripherally tensioned around the steering actuating arm.

3,584,596
LOW PRESSURE WARNING DEVICE
Paul W. Westcott, North Tonawanda, and Allan M. Bickford, East Aurora, both of, N.Y., assignors to A-T-O Inc., Cleveland, Ohio
Filed Dec. 5, 1968, Ser. No. 781,539
Int. Cl. G01l *19/12*
U.S. Cl. 116—70 **8 Claims**



A low pressure warning apparatus having a valve body in which fluid under pressure from a container or supply line being sensed is admitted through a spring-loaded check valve into a fluid pressure storage chamber within the valve body. Upon a reduction in supply line pressure, the chick valve is closed to trap fluid under predetermined pressure in said storage chamber. The trapped fluid under pressure is utilized to unseat a valve means, preferably upon a further reduction in supply line pressure, whereby communication is established from said storage chamber to a fluid pressure responsive means in the valve body. The fluid pressure responsive means includes a piston having a striker operable to ring a bell upon the admission of pressure fluid to said piston from said storage chamber.

3,584,597
GOLF SCORING DEVICE
George Simmons, Fiddler's Cove, Hwy. 1, Pescadero, Calif.
Filed Jan. 26, 1970, Ser. No. 5,821
Int. Cl. A63b *71/06*
U.S. Cl. 116—120 **8 Claims**

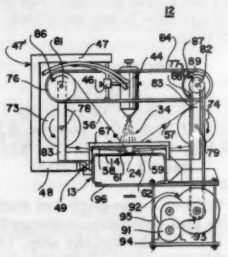


A device for use in scoring segments of play of a game wherein a plurality of members having scoring indicia thereon are shiftably mounted on a support at locations permitting one of the indicia of each member to be moved into alignment with indicia of other members whereby the aligned indicia represent the scores of particular segments of play of a game. Each member has means thereon for releasably holding the same in a generally fixed position on the support and the members are movable along parallel paths. The device is suitable for use in scoring a golf game and can be carried in a garment pocket.

3,584,598
PILL DISPENSER WITH INDICATING MEANS
Robert Gayle, and Thomas H. Hayes, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
Filed Aug. 19, 1968, Ser. No. 753,569
Int. Cl. G09f *9/00*
U.S. Cl. 116—121 **2 Claims**

A pill dispenser with indicating means in the form of a cylinder having a plurality of sequential indicia patterns which is selectively rotatable for alignment of one indicia pattern with a like pattern of pills, thereby indicating when each pill is to be taken.

3,584,599
PAINTING MACHINE WITH RENEWING MASK
James F. Chastain, Madison, Ind., and James E. Spears, Alexandria, Ky., assignors to Textron, Inc., Providence, R.I.
Filed Nov. 1, 1968, Ser. No. 772,588
Int. Cl. B05c *5/00*
U.S. Cl. 118—301 **4 Claims**



A painting machine which comprises a pair of elongated webs, spaced parallel web supporting bars, there being a painting station underlying the bars, means for advancing the webs around the bars, and a paint spray head overlying the bars and directed toward the painting station, the portion of the webs overlying the bars forming paint masks overlying the painting station.

3,584,600

MULTIPLE DOCTOR BLADE COATING APPARATUS

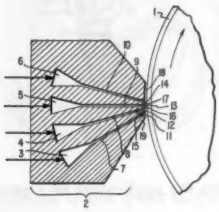
Mamoru Ishiwata; Yoshiaki Nagai, and Yosuke Uchida, all of, Ashigara Kamigun, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara Kamigun, Japan

Continuation of application Ser. No. 746,176, July 19, 1968, now abandoned. This application Feb. 13, 1970, Ser. No. 10,079

Claims priority, application Japan, July 21, 1967, 42/46947

Int. Cl. B05c *3/02*

U.S. Cl. 118—411 1 Claim



Providing a final doctor blade in a multiple blade coating apparatus having a surface dimension, in the direction of coated web movement, of at least five times that of the proceeding doctor blades.

3,584,601

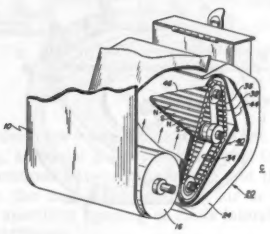
MAGNETIC BRUSH BELT DEVELOPMENT

Lyman H. Turner, Pittsford, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Oct. 28, 1968, Ser. No. 771,219

Int. Cl. B05c *5/00*

U.S. Cl. 118—637 6 Claims



Xerographic apparatus for the magnetic brush development of latent electrostatic images with a two-component magnetic developer. The apparatus includes a nonmagnetic shield with a roughened face spaced from a parallel stretch of photoconductive material in a xerographic development zone. A rotatable array of spaced magnets is moved on the side of the plate remote from the photoconductor to move developer in brushing contact with the latent electrostatic image being developed. The magnetic array has alternating north and south faces extending transverse to the direction of movement of the magnets so that the developer alternately collapses and reforms during movement of the magnets to thereby move the developer in a direction opposite to the direction of movement of the magnets to develop images in the photoreceptor.

3,584,602

AQUARIUM FISH HATCHERY DEVICE

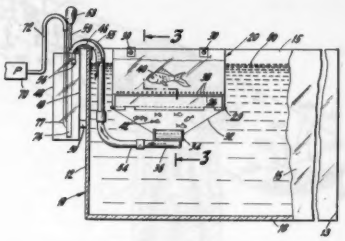
Robert Stasio, Brooklyn, N.Y., assignor to Halvin Products Company, Inc., Brooklyn, N.Y.

Filed June 9, 1969, Ser. No. 831,635

Int. Cl. A01k *63/00*

U.S. Cl. 119—5 6 Claims

A fish hatching device consisting of a main tank removably supporting a confining mother fish containing housing including a lower auxiliary housing for hatched fish, the two housings being separated by a removable grid and openings in the upper mother fish containing housing for permitting a flow of water thereinto from the main tank. Supported exteriorly of the main tank is a flow and aerating tank divided into two compartments by a removable partition having a screened opening. Water is drawn from the lower end of the auxiliary tank into one compartment and flows through the screen into



the other compartment from which the water is returned to the main tank, the water being aerated by means of an electric air pump, the cycle being repeated as long as necessary. The removable grid supports the eggs laid by the mother fish and the auxiliary housing contains the hatched fish. Later the same may be transferred to the main tank when attaining sufficient growth.

3,584,603

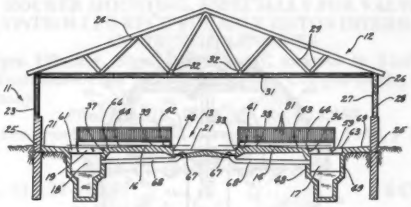
FARROWING LAYOUT

Dwayne C. Rutherford, Vail, Iowa

Filed Sept. 15, 1969, Ser. No. 857,897

Int. Cl. A01k *01/00*

U.S. Cl. 119—16 9 Claims



A farrowing layout in a building having exterior sidewalls and a roof. The floor comprises two raised rectangular pads extending longitudinally of the building in side-by-side relation. The pads slope downwardly from intermediate the longitudinal sides of the pads to the longitudinal sides. Two longitudinal manure troughs are formed contiguous with the exterior longitudinal sides of the pads and slats are formed over the troughs. A central aisle is formed between the pads. A plurality of farrowing enclosures are juxtaposed in two longitudinal rows which are positioned over the pads, the pads thereby serving as a floor for the farrowing enclosures.

3,584,604

APPARATUS FOR TRAINING DOGS IN SPORTS

Herbert O. Wegner, La Canada, Calif., assignor to Herbert O. Wegner and Martha Wegner, Los Angeles, Calif.

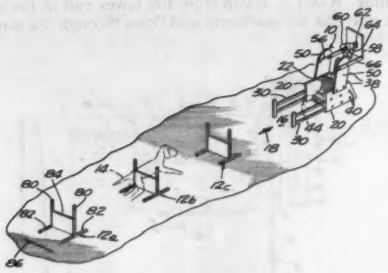
Filed Aug. 29, 1969, Ser. No. 854,190

Int. Cl. A01k *15/00;* A63b *69/40;* A63j *23/00*

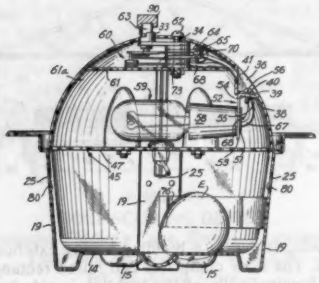
U.S. Cl. 119—29 10 Claims

This invention provides an apparatus for training dogs to compete with other dogs, in sports, singly or in teams, in playing a game which in many ways resembles basketball. Specifically, the apparatus comprises spaced-apart sidewalls, a backwall and a backboard to which is mounted a basket at a desired height. Elongated rails extending from each sidewall form a chute or alley. A ball positioned at the entrance end of the chute is first rolled toward the backwall

and hence upwardly and into the basket. Scoring depends on the manner in which the ball is passed, if at all, through the basket. If desired, one or more hurdles may be employed with each dog required to clear each hurdle either before or after (or both) dropping the ball in the basket.



3,584,605
HEATER ASSEMBLY FOR USE AS INCUBATOR, CULTURE TESTER AND THE LIKE PURPOSES
Frederick A. Schwartz, Dobbs Ferry, N.Y., assignor to Insta Sales Corporation, New York, N.Y.
Filed June 3, 1969, Ser. No. 830,004
Int. Cl. A01k *41/00, 41/02*
U.S. Cl. 119—37 **21 Claims**

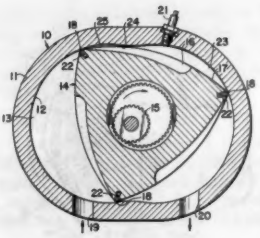


This heating assembly has an adjustable thermostat at top of a dome mounted on a base. A heating lamp is placed in the lower part of the dome. A protective plate is interposed between the thermostat and lamp. The holder for the lamp is nonadjustably fixed. A perforated shield plate is fixed between the base and dome and carries a strain relief plug through which wiring for lamp and thermostat pass. Also the bottom of the base has recesses to receive eggs to be hatched. When used for making cultures, a plate mounted in the base, has holes to receive vials containing cultures and a vial for water.

3,584,606
LARIAT WITH RELEASABLE HONDA
Guy M. Reidhead, 406 South 1st Street, Phoenix, Ariz.
Filed Apr. 1, 1969, Ser. No. 811,938
Int. Cl. A01k *29/00*
U.S. Cl. 119—153 **4 Claims**

A lariat formed by a rope looped back upon itself and threaded through a honda secured to the end of the rope. The honda is split to permit it to release a rope passing therethrough upon the application of a predetermined force thereon.

3,584,607
COMBUSTION CHAMBER FOR A ROTARY PISTON TYPE INTERNAL COMBUSTION ENGINE
Kenichi Yamamoto, Hiroshima-shi, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima-shi, Japan
Filed June 2, 1969, Ser. No. 829,656
Claims priority, application Japan, June 6, 1968, 43/47834
Int. Cl. F02b *55/14*
U.S. Cl. 123—8.45 **2 Claims**

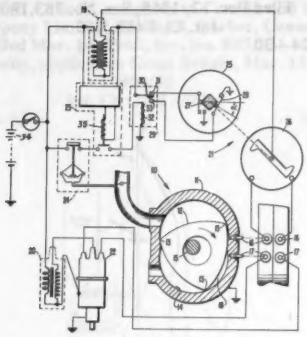


In a rotary piston internal combustion engine having a casing formed by a central housing having an epitrochoidal inner surface and side housings sealingly disposed at both sides thereof, a rotary piston with a substantially triangular profile and rotatable in a planetary motion is disposed within the casing and has a combustion chamber formed by its peripheral surface thereof as recesses starting from each apex portion and gradually increasing in depth in its rotating direction and broadest at the apex portion and gradually decreasing its width and ending intermediate the apex portions.

3,584,608
IGNITION SYSTEM FOR ROTARY PISTON INTERNAL COMBUSTION ENGINE
Masao Shibagaki, Asa-gun, Japan, assignor to Toyo Kogyo Co., Ltd., Aki-gun Hiroshima-ken, Japan
Filed June 3, 1969, Ser. No. 829,942
Claims priority, application Japan, June 3, 1968, 43/38106
Int. Cl. F02b *53/12*
U.S. Cl. 123—8.45 **3 Claims**

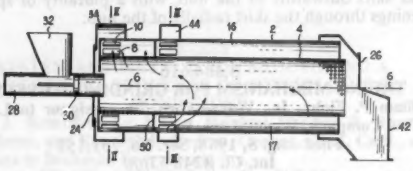
A rotary piston internal combustion engine carries two ignition plugs exposed to a common combustion chamber with

ignition circuits corresponding to the two plugs including means for delaying the ignition time for either of the two ig-



nition plugs in response to low speed and/or low load operation of the engine.

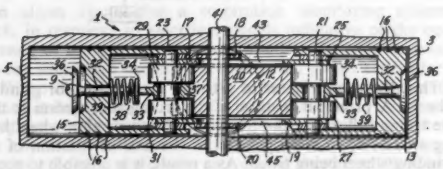
3,584,609
ROTARY DRUM FOR WASTE INCINERATOR
Paul Lerner, Montrouge, and Georges Poteriot, Pont Sainte Maxence, both of, France, assignors to La Soudure Autogene Francaise, Paris, France
Filed Mar. 5, 1970, Ser. No. 16,652
Claims priority, application France, Mar. 31, 1969, 6909647
Int. Cl. F23g *5/06*
U.S. Cl. 110—14 **5 Claims**



A rotary drum for waste incinerator, of the type having an outer casing, a coaxial gas-pervious support for a waste, longitudinal partitions between the casing and the support and apertures in the casing for admitting air or for exhausting fumes, said apertures opening in ducts laterally bounded by the lateral partitions.

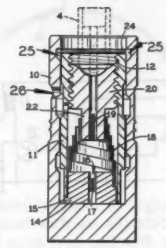
A transverse partition, located between the casing and the gas-pervious support, divides each one of the ducts in a section in which flows the admitted air and a section in which flow the fumes to be exhausted.

3,584,610
INTERNAL COMBUSTION ENGINE
Kilburn I. Porter, P.O. Bos 547, Evanston, Wyo.
Filed Nov. 25, 1969, Ser. No. 879,734
Int. Cl. F02b *75/22;* **F01l** *1/00;* **F02b** *75/04*
U.S. Cl. 123—55AA **9 Claims**



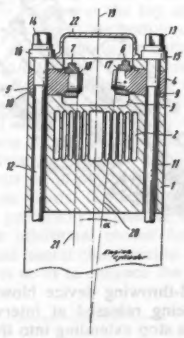
A radial internal combustion engine comprising pairs of diametrally opposed cylinders, the pistons of which act on a central cam to rotate a shaft. Each piston head carries at least one intake or exhaust valve actuated by the same cam.

3,584,611
TEMPERATURE COMPENSATING VALVE LIFTER FOR INTERNAL COMBUSTION ENGINE
Lloyd E. Miller, Jr., 8330 South West 52 Ave., Miami, Fla.
Filed July 25, 1969, Ser. No. 844,780
Int. Cl. F01l *1/22, 1/14*
U.S. Cl. 123—90.19 **3 Claims**



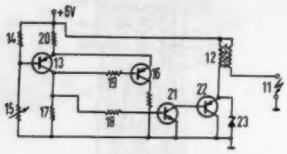
A valve lifter for an internal combustion engine in which the effective length thereof is automatically varied by a temperature sensitive element rotating a screw means in the device to compensate for thermal longitudinal expansion and contraction of associated valve stem and push rod components and thus maintain a minimum constant axial clearance in the valve train at various engine operating temperatures.

3,584,612
ROCKER MOUNTING, ESPECIALLY FOR VALVE CONTROLLED RECIPROCABLE PISTON INTERNAL COMBUSTION ENGINES
Jurgen Uflacker, Stumpen, Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne-Deutz, Germany
Filed Nov. 10, 1969, Ser. No. 875,058
Claims priority, application Germany, Nov. 19, 1968, P 18 09 723.9
Int. Cl. F01l *1/18;* **F02f** *1/32*
U.S. Cl. 123—90.41 **6 Claims**



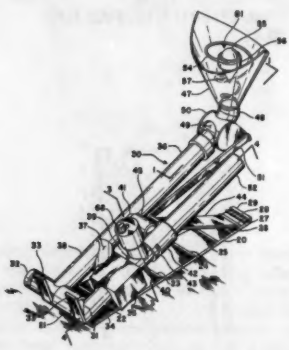
A rocker mounting for a valve controlled reciprocable piston internal combustion engine in which the rockers are mounted on the inner ends of pivots located in the sidewalls of the cylinder head and firmly connected thereto by socket head capscrews extending through said pivots.

3,584,613
IGNITOR FOR INTERNAL COMBUSTION ENGINES
Siegmund Kreil, Stockdorf, and Erich Metzger, Munich, both of, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany
Filed June 25, 1969, Ser. No. 836,273
Claims priority, application Germany, July 4, 1968, P 17 64 614.9
Int. Cl. F02p 3/02
U.S. Cl. 123—148E 7 Claims



An ignition device for internal-combustion engines, wherein a spark gap is, energized by a voltage pulse, has a transformer having primary and secondary windings, the secondary winding being connectable to the spark gap. An amplifier is connected to the primary winding and a magnetic circuit provides a magnetic field having an intensity which changes between determined values thereof. A galvanomagnetic sensing element is disposed in the magnetic field and is responsive to the changes in the field intensity. The sensing element is connected to the amplifier for controlling the flow of current through the primary winding so as to develop voltage pulses across the secondary winding for energizing the spark gap.

3,584,614
AUTOMATIC BALL THROWER
Tibor Horvath, 944 Avenue R, New York, N.Y.
Filed Dec. 4, 1968, Ser. No. 781,079
Int. Cl. F41b 11/00
U.S. Cl. 124—11 10 Claims

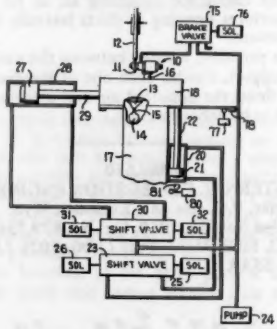


A pneumatic ball-throwing device blows balls through a barrel, the balls being released at intervals by a release mechanism having a stop extending into the barrel, the stop being fixed to a bellows of the release mechanism with the bellows having an air bleed allowing the stop to be slowly pushed from the barrel to release each ball after a desired interval. A breech between a blower and the barrel has a tubular magazine that feeds bulls into it past a flap valve which opens by suction to admit a ball and closes by air pressure when a ball engages the stop of the release mechanism. The barrel contains a friction strip to impart a spin to thrown balls.

3,584,615
BOWSTRING SILENCER
Robert E. Stinson, Acme, Mich., assignor to Kwikee Kwiver Co., Inc., Acme, Mich.
Filed Dec. 12, 1968, Ser. No. 783,180
Int. Cl. F41b 5/00
U.S. Cl. 124—30 17 Claims

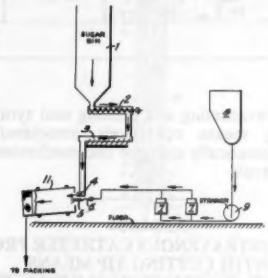
An element of disclike or wheellike configuration integrally molded of resilient material, having a central hub with an aperture therethrough for receiving the bowstring, by which such element is mounted thereupon, and having an annular skirt outwardly of the hub, with a plurality of spaced openings through the skirt radially of the hub.

3,584,616
TRUING MECHANISM FOR GRINDING WHEELS
William P. Flohr, Jr., Waynesboro, Pa., assignor to Landis Tool Company, Waynesboro, Pa.
Filed Aug. 8, 1968, Ser. No. 751,152
Int. Cl. B24b 53/00
U.S. Cl. 125—11 10 Claims



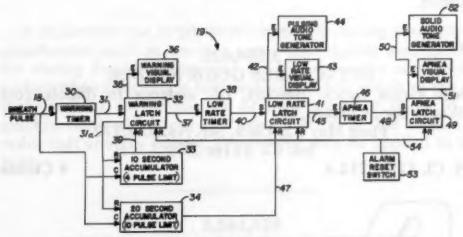
This disclosure relates to a truing mechanism for grinding wheels. A principal feature of the truing mechanism is that the truing roller is in the form of a relatively thin wheel having an axis of rotation parallel to the axis of rotation of the grinding wheel being trued. As a result, it is possible to rotate the truing roller during a first pass across the grinding wheel to perform a rough truing operation and to hold the truing roller stationary during a return pass, even across the rounded corners of the grinding wheel, to perform a light and highly desirable fine finish truing operation.

3,584,617
PRODUCTION OF SOFT SUGAR
Stephen Stachenko, Preville, Quebec; Alan J. Roberts, St. Lambert, Quebec, and John H. Magee, Baie D'urfe, Quebec, all of, Canada, assignors to Canada and Dominion Sugar Company Limited, Montreal, Quebec, Canada
Filed Mar. 14, 1969, Ser. No. 807,331
Claims priority, application Great Britain, Mar. 15, 1968, 12800/68
Int. Cl. C13f 3/00
U.S. Cl. 127—63 13 Claims



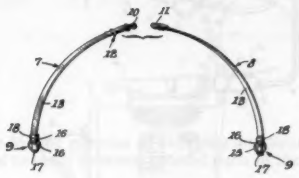
Soft sugar or brown sugar is produced by atomizing syrup under pressure onto a falling curtain of white sugar. The white sugar particles should present a sufficiently large surface area. The process is of general applicability and can be reproduced. The product is uniform. The composition of the syrup can be controlled.

3,584,618
SYSTEM AND METHOD FOR MONITORING A PROGRESSIVE SEQUENCE OF PHYSIOLOGICAL CONDITIONS
Clyde J. Reinhard, La Habra Heights; Gordon R. Justus, Anaheim, and Kenneth L. Kearns, Orange, all of, Calif., assignors to Beckman Instruments Inc.
Filed Mar. 17, 1969, Ser. No. 807,861
Int. Cl. A61b 5/05
U.S. Cl. 128—2.1R 33 Claims



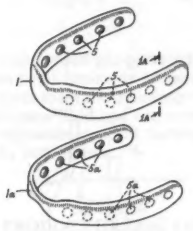
An alarm circuit for a respiration monitoring system which, in response to electrical signals indicative of the occurrence of a breath, determines whether the time interval between successive breaths exceeds a first preset time interval. When this occurs, a warning indicator is activated and the circuit begins monitoring the respiration rate. If the rate during a second preset time interval is less than a first preset rate, a low rate indicator is activated and the circuit determines whether the respiration rate during the second time interval and a third preset time interval is less than a second preset rate which is greater than the first preset rate. If the rate exceeds the second preset rate, the warning and low rate indicators are deactivated. If the rate is less than the second preset rate, an apnea indicator is activated.

3,584,619
FACE LIFT DEVICE
Lawrence Bowser, Jr., 447 North Rodeo Drive, Beverly Hills, Calif.
Filed July 23, 1968, Ser. No. 746,964
Int. Cl. A61f 5/08
U.S. Cl. 128—76 1 Claim



A two-part elongated member to engage over the crown of the head and provided with an adjustable connection, each part being provided at its free end with a tress-engaging loop and clip end to lift adjacent areas of the face.

3,584,620
COSMETIC DEVICE
Edith A. Hale, 310 East 44th St., New York, N.Y.
Filed June 19, 1969, Ser. No. 834,816
Int. Cl. A61f 5/08
U.S. Cl. 128—76 12 Claims

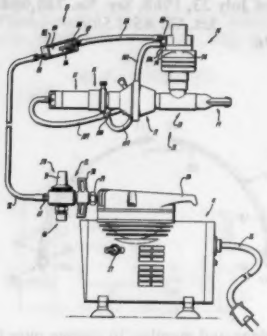


A resilient band for insertion in the mouth as a cosmetic device. The band is worn over the entire length of the gum line in either or both jaws. The band is adapted to fit closely over the indentation located at the top of the alveolar gum tissue on the upper jaw and at the bottom of the alveolar gum tissue on the lower jaw extending the entire length of the alveolar gum tissue on either jaw and covering approximately one-half of the alveolar gum tissue in the vertical plane. It is fabricated of silicone plastic or the like which is sufficiently pliable that it will have some natural adherence to the moistened gum tissue of the mouth. Additionally, the band may be held in place by specially provided suction cups, clamps or by magnets set in polarity repelling relation in the upper and lower gum bands. The outer surface of the bands may have pouches preferably adjustable in size whose purpose is to provide additional means for puffing out the cheeks, upper lip and lateral chin areas to eliminate wrinkles and other facial lines so as to enhance the appearance of the user.

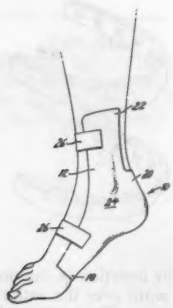
3,584,621
RESPIRATORY APPARATUS
Forrest Morton Bird, 212 N.W. Cerritos, Palm Springs, Fla., and Henry Louis Pohndorf, 1227 Brewster Drive, El Cerrito, Calif.
Filed Oct. 31, 1968, Ser. No. 772,346
Int. Cl. A62b 7/00
U.S. Cl. 128—145.8 18 Claims

Respiratory apparatus having a patient adapter in the form

of a mouthpiece and a servocontrol valve assembly and exhaust valve assembly mounted on the mouthpiece and carried by the mouthpiece for controlling the inhalation phase and the exhalation phase of the respiratory apparatus.



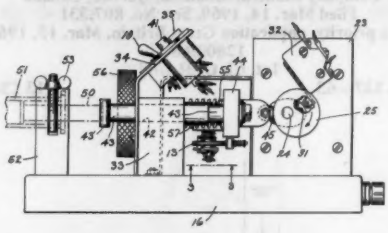
3,584,622
SUPPORT DEVICE FOR PREVENTION OF ANKLE INJURIES
Alfonso J. Domenico, 7133 Jackson St., Philadelphia, Pa.
Filed Jan. 6, 1969, Ser. No. 789,275
Int. Cl. A61f *13/06;* **A43b** *7/00*
U.S. Cl. 128—166 **5 Claims**



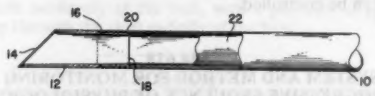
A support device for prevention of ankle injuries is disclosed, wherein a support member of flexible sheet material includes a foot receiving member adapted to receive the rear portion of a wearer's foot and cover the ankle, and stirrup portions extending upwardly from the foot receiving member and adapted to contact opposite sides of the wearer's leg, above the ankle. No part of the foot receiving member intrudes into the area of the calf muscles of the wearer, so that restriction of movement of the Achilles' tendon is avoided. Also, no part of the foot receiving member extends forwardly beyond the metatarsus of the wearer's foot, and the forward and upper portions of the foot receiving member are open to avoid restriction of desired foot movement.

3,584,623
CANNULAE-FLUSHING MEANS
Robert P. Carlisle, 1614 North 119th St., Milwaukee, Wis.
Filed Aug. 26, 1968, Ser. No. 755,223
Int. Cl. A61b *5/02;* **A61m** *5/20*
U.S. Cl. 128—2.05R **1 Claim**

To prevent the clotting of blood in small drainage tubes, or so-called cannulae, placed in the blood vessels of hospital patients for the purpose of monitoring the patients' blood pressure there is provided an apparatus adapted to support a hypodermic syringe in position to direct a flushing solution into a cannula at periodic intervals, said apparatus including a motor-driven cam and coacting spring-loaded plunger mechanism for evacuating and refilling said syringe and adjustable timing means operatively associated therewith designed to automatically energize said mechanism at desired preset time intervals.

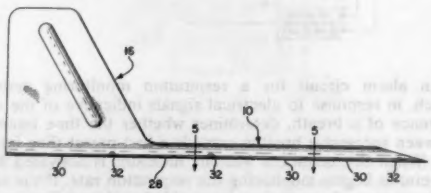


3,584,624
FLEXIBLE INTRAVENOUS CATHETER PROVIDED WITH CUTTING TIP MEANS
Vincent L. de Ciutiis, 3234 Parkhurst Drive, Palos Verdes Estates, Calif.
Continuation of application Ser. No. 576,281, Aug. 3, 1966, now abandoned. This application Feb. 24, 1969, Ser. No. 805,976
Int. Cl. A61m *5/00*
U.S. Cl. 128—214.4 **2 Claims**



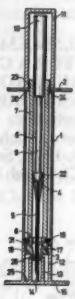
A catheter for intravenous injections and the like is disclosed, comprising a flexible cannula having a hardened ferrule on the distal end thereof and adapted to cut through tissue to enter a vein. A rigid stylet is concentric within the cannula and removable after the cannula is properly placed. The ferrule and cannula are of identical outside diameter. The stylet has a blunt distal end which bears directly on the ferrule to transmit force thereto during initial placement of the catheter.

3,584,625
DETACHABLE GUIDE NEEDLE
Edwin Grant Swick, Bartlett, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed May 22, 1969, Ser. No. 826,970
Int. Cl. A61m *5/00*
U.S. Cl. 128—214.4 **4 Claims**



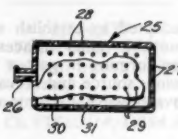
Detachable guide needle devices which are utilized in conjunction with flexible catheters in withdrawing or introducing fluids relative to a body, have features incorporated therein which permit separation of the guide needle into detached sections after use thereof for complete removal from an associated flexible catheter.

3,584,626
HYPODERMIC SYRINGE
Lars Georg Johansson, Notsater; Skarhamn, Sweden
Filed Aug. 27, 1968, Ser. No. 755,567
Claims priority, application Sweden, Nov. 22, 1967, 16,033/67
Int. Cl. A61m *5/32*
U.S. Cl. 128—218 5 Claims



A hypodermic syringe having a syringe body, a piston rod arranged movably in said body and an injection needle, in which the injection needle is housed inside said syringe body prior to the use of the syringe and when moved into its injection position is brought into sealing abutment with a seating arranged in the syringe body.

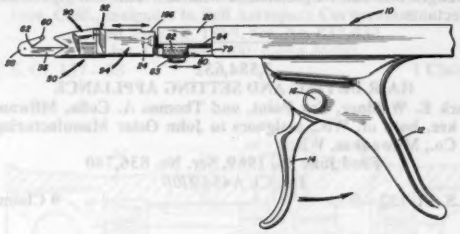
3,584,627
FOUNTAIN SYRINGE WITH ATTACHMENT FOR ORAL USE
William A. Fisher, 1296 Downing St, East Sparta, Ohio
Filed Nov. 17, 1969, Ser. No. 877,413
Int. Cl. A61m *3/00, 7/00*
U.S. Cl. 128—229 1 Claim



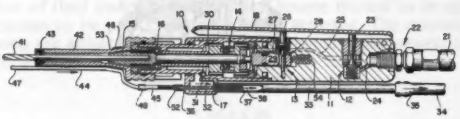
A device for use in physical hygiene including a variety of attachments such as one for rectal and vaginal use, another for rinsing food particles and the like from the oral cavity, and another attachment for washing the hair. Each of the attachments of the device are of such structure so as to be quickly removable from the hose portion of the device in order that another desired attachment may be applied to the hose.

3,584,628
WIRE SUTURE WRAPPING INSTRUMENT
David T. Green, Norwalk, Conn., assignor to United States Surgical Corporation, Baltimore, Md.
Filed Oct. 11, 1968, Ser. No. 766,680
Int. Cl. A61b *17/32, 17/12*
U.S. Cl. 128—305 14 Claims

A wire wrapping suturing instrument comprising a gun portion and a cartridge portion which is removable and disposable. The gun portion consists of a pair of relatively slidable spring biased push elements which cooperate with different parts of the cartridge portion. The cartridge portion consists of a rail assembly upon which is mounted a barrel holder, pusher guide body, and wrap cooperating with one of the push elements of the gun, and a pusher cooperation with the other push element of the gun. Cylindrical barrels containing a load of wire sutures are mounted in the barrel holder, and in successive operations of the instrument, the wire sutures are discharged from the barrels and wrapped about an organic tube for the purpose of clamping and suturing. A knife is provided to sever between sutured parts of the tube.



3,584,629
POWER DRIVEN SURGICAL INSTRUMENT HAVING ASPIRATOR
William A. Hoef, Groton, Conn., and Mortimer George Ahearn, Wayne, N.J., assignors to Edward Weck & Company, Inc., Long Island, N.Y.
Filed Dec. 3, 1968, Ser. No. 780,676
Int. Cl. A61b *17/16;* A61c *1/02;* F03b *13/04*
U.S. Cl. 128—305 3 Claims



A high speed compressed gas-powered surgical instrument having a self-contained aspirator to assure a clear surgical field. The spent gases from the instrument motor are directed away from the surgical field and are used to create a partial vacuum in the aspirator conduit terminating adjacent the working end of the cutting tool.

3,584,630
TOBACCO PRODUCT HAVING LOW NICOTINE CONTENT ASSOCIATED WITH A RELEASE AGENT HAVING NICOTINE WEAKLY ABSORBED THEREON
George Esler Inskeep, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.
Continuation of application Ser. No. 603,419, Dec. 21, 1966, now abandoned. This application Aug. 20, 1969, Ser. No. 852,983
Int. Cl. A24d *01/06*
U.S. Cl. 131—9 1 Claim

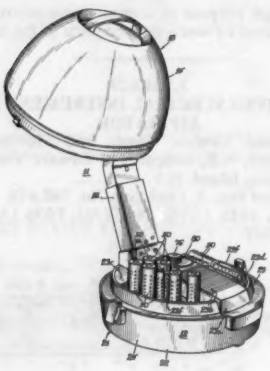
This disclosure relates to a tobacco product containing a nicotine-releasing agent and to a method for releasing a controlled amount of nicotine into tobacco smoke. The nicotine-releasing agent comprises a finely divided, weak absorbent of gas furnace or channel carbon black, the said carbon black having on its surface weakly adsorbed per part of weak adsorbent. The nicotine is released from the weak adsorbent during smoking to bring the nicotine content in the smoke generated by a low nicotine tobacco with which it is associated, to a total level of 0.1—3.0 mg.

3,584,631
RECONSTITUTED TOBACCO COMPOSITION
Howard M. Halter, Norwalk, and Otto K. Schmidt, Windsor, both of, Conn., assignors to AMF Incorporated
Division of Ser. No. 688,663, Dec. 7, 1967, Patent No. 3,500,833. Filed Aug. 25, 1969, Ser. No. 872,792
Int. Cl. A24b *03/14*
U.S. Cl. 131—17 4 Claims

A reconstituted tobacco sheet is disclosed in which finally divided tobacco is combined with an adhesive consisting essentially of ethyl cellulose with an ethoxyl content of 45.5

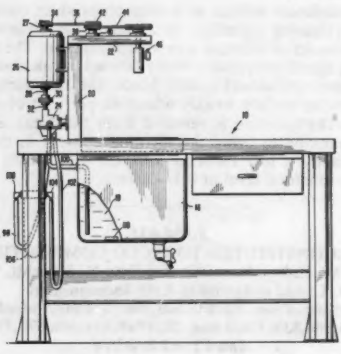
percent to 46.8 percent and a viscosity at a 5 percent concentration of at least 5,000 cps at 25° C. The product produced is characterized by a substantial amount of wet strength and can be plasticized with conventional glycol humectants.

3,584,632
HAIR DRYING AND SETTING APPLIANCE
Jack E. Weidner, Fox Point, and Thomas A. Colla, Milwaukee, both of, Wis., assignors to John Oster Manufacturing Co., Milwaukee, Wis.
Filed June 26, 1969, Ser. No. 836,740
Int. Cl. A45d 2/00
U.S. Cl. 132—9 9 Claims



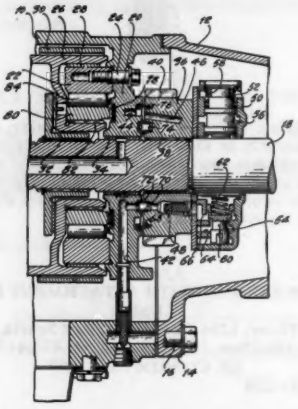
A hair drying and setting appliance having a base containing a blower for delivering heated air for convection drying of hair and including hair curler supports which heat the curlers for use in conduction drying of hair. The base having a frame which mounts the hair curler support posts and heater and the blower motor on the upper side of the frame overlying a blower fan positioned on the lower side of the frame.

3,584,633
ASSEMBLY FOR REVERSE FLUSHING AUTOMOTIVE TYPE TORQUE CONVERTERS
Wallace Arrigo, 4703 Duncrest Ave, Baltimore, Md.
Filed Feb. 12, 1969, Ser. No. 798,700
Int. Cl. B08b 3/04, 9/00
U.S. Cl. 134—104 8 Claims



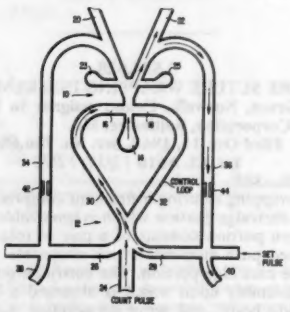
The turbine of an automotive torque converter is rotated while its casing is held stationary and solvent is introduced into the converter, thereby to effect a reverse flushing action to remove deposit and potentially injurious particles from the interior of the converter. An adapter fits over and seals upon the converter hub and the upper end of the adapter is provided with a sealed bearing journaling the splined turbine drive shaft, solvent being introduced into the converter through the adapter. An overhead drive is provided for the turbine drive shaft and a single motor is used simultaneously to drive the turbine shaft and a pump for circulating the solvent.

3,584,634
LABYRINTH SEAL FOR A GOVERNOR VALVE ASSEMBLY IN AN AUTOMATIC POWER TRANSMISSION MECHANISM
Edwin F. Jagdmann, Northville, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Jan. 13, 1970, Ser. No. 2,603
Int. Cl. G50d 13/10
U.S. Cl. 137—54 6 Claims



A running seal adapted to establish a fluid connection between relatively movable radial surfaces in a valve system, said fluid connection forming in part a fluid-pressure-flow path between a pressure source and movable valve elements and between the movable valve elements and a relatively stationary valve body.

3,584,635
SETTABLE FLUIDIC COUNTER
Raymond W. Warren, McLean, Va., assignor to The United States of America as represented by the Secretary of the Army.
Filed Apr. 7, 1969, Ser. No. 814,036
Int. Cl. F15c 1/12
U.S. Cl. 137—81.5 8 Claims



A settable fluidic binary counter stage which includes a pair of pure fluidic amplifiers. The outputs of the first fluidic

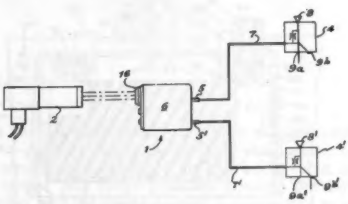
amplifier are fed back with resistors in the path thereof to the control inputs of the second fluidic amplifier. The outputs of the second fluidic amplifier are connected to the control inputs of the first fluidic amplifier in such a manner as to form a control loop. If a set pulse is applied to one of the control inputs of the second fluidic amplifier and then removed, the counter stage will be stably set in its desired mode of operation and ready to count upon the receipt of a count pulse. Any number of such counter stages may be cascaded and randomly set to a desired condition and the stages thereof will retain such a state after the setting pulses are removed, despite the order of their removal.

3,584,636

PHOTOVOLTAIC CELL POWERED MANGETIC COIL FOR OPERATION OF FLUIDIC CIRCUIT FLAPPER

Charles R. Pettis, Jr., Ithaca, N.Y., assignor to Hi-speed Checkweigher Co., Inc., Ithaca, N.Y.

Filed Mar. 21, 1969, Ser. No. 809,070
Int. Cl. F15c *1/08*
U.S. Cl. 137—81.5 **8 Claims**



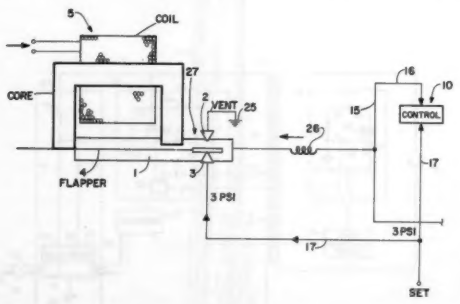
A photofluidic eye comprising a photovoltaic cell and a magnetic coil operated flapper assembly powered thereby for alternately opening and closing fluidic back pressure orifices. No external power or switching arrangement is employed to avoid the occurrence of an electric spark when an environment containing explosive materials is present.

3,584,637

FLUIDIC SWITCH

Paul M. Blaiklock, Newton, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Filed June 19, 1969, Ser. No. 834,837
Int. Cl. F15c *3/14*; **G05d** *3/00*
U.S. Cl. 137—82 **1 Claim**



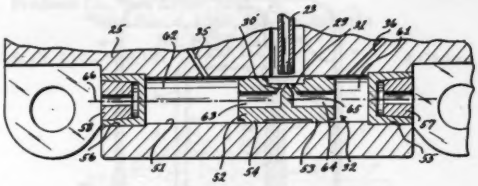
A pneumatic air system for closing off a fluid passage with minimal leakage. A back pressure chamber downstream of the passage is pressurized to equal the pressure upstream of the passage. The back pressure chamber has a vent and a back pressure inlet with a member movable to close one or the other according to a control signal. An application of this switch is in a restrictor bleed system in a digital restrictor matrix as applied to a fluidic control loop in a digital to analog converter.

3,584,638

ADJUSTABLE RECEIVER PORT CONSTRUCTION FOR JET PIPE SERVOVALVE

Clyde E. Cobb, and Charles E. Jones, both of Lake View Terrace, Calif., assignors to Bell Aerospace Corporation

Filed June 13, 1969, Ser. No. 833,033
Int. Cl. F15b *5/00*; **G05d** *16/00*
U.S. Cl. 137—83 **1 Claim**



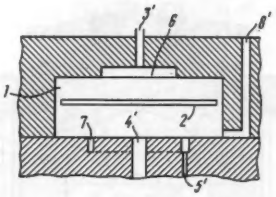
Disclosed is a jet pipe type servovalve wherein the feed tube is disposed angularly with respect to a flapper to which it is affixed and which is movable by a torque motor the armature of which is connected to the flapper. The feed tube has one end thereof affixed rigidly to the housing and the other end thereof terminating in a nozzle which is directed toward a receiver. The output ports of the receiver are connected to the end chambers of a cylinder within which a power control valve is slidably positioned so as to control the flow of fluid under pressure from a source thereof to an apparatus to be positioned such as an actuator. The receiver ports are adjustable laterally and rotationally with respect to the jet pipe nozzle.

3,584,639

DISCRETE-OPERATING PNEUMATIC ELEMENT FOR LOGICAL FUNCTION

Jury Nikolaevich Potepalov; Evgeny Vasiljevich Grechkovsky; Evgeny Georgievich Sonkin, and Robert Jurjevich Fedoseev, all of Moscow, U.S.S.R., assignors to Gasudarstuenny Nauchno Issledovatelsky Institute Organicheskikh polvproduktov i Krasitelei, Moscow, U.S.S.R.

Filed June 8, 1965, Ser. No. 463,472
Int. Cl. F16k *15/04*; **G05d** *11/00*
U.S. Cl. 137—111 **3 Claims**



A pneumatic discrete-operating device for carrying out logical functions in which a diaphragm is freely displaceable in a chamber between an inlet orifice for the delivery of a control airflow into the chamber and a control orifice coupled to an air pressure source for passing a controllable airflow to an outlet orifice through the chamber. The diaphragm is freely displaceable in the chamber under the pressure of the air at the inlet and control orifices.

3,584,640

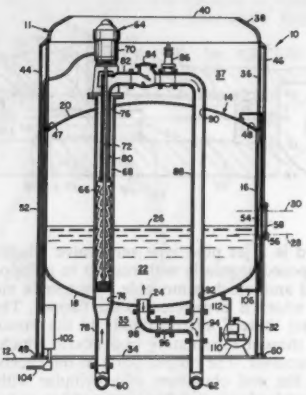
PACKAGE PNEUMATIC PUMP STATION

William E. Chapman, 266 Deerfield Drive, Moraga, Calif.

Filed Jan. 26, 1970, Ser. No. 5,481
Int. Cl. F04b *13/02, 19/06*; **F04d** *31/00*
U.S. Cl. 137—209 **11 Claims**

A pneumatic pump station supplying water for use in buildings, municipal water systems, or ships and the like. The

pump station provides a compact, easily transportable unit including a hydropneumatic tank with a water pump, pump motor, and inlet and outlet fluid conduits arranged to facilitate simplified installation and maintenance. The water pump driven by a motor in an easily accessible location, with the pump extending vertically through the tank. The pump discharge manifold is directed through the tank in a sealed



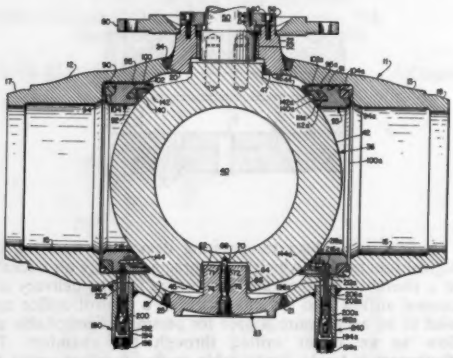
conduit with a branch conduit providing communication into the tank. Means are provided to maintain a pressurized air pocket within the tank for discharging water under pressure when the pump is shut down. The housing for the unit encloses the elements in a tamper-proof manner, and vertical rib members serve both as enclosures for the control conduits and tank sight glass, and also provide a rain water drain.

3,584,641

LUBRICATED VALVE ASSEMBLY

Bertram J. Milleville; Eldert B. Pool, and Mathew L. Freeman, all of Pittsburgh, Pa., assignors to Rockwell Manufacturing Company, Pittsburgh, Pa.

Filed Jan. 3, 1968, Ser. No. 695,487
Int. Cl. F16k *5/22*
U.S. Cl. 137—246.15 **28 Claims**



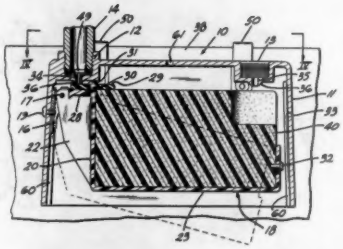
A valve seat ring construction having a solid annulus of nonmetallic, elastically deformable material anchored in an annular groove of a rigid seat ring and projecting therefrom for bearing engagement with the surface of a valve closure member such as a ball-type valve plug. Two annular sealing lips of different diameters are integral with the annulus and are resiliently compressed against the plug surface by a second annulus of elastically deformable material which is anchored on the opposite end of the seat ring and which is adapted to be compressed against the interior of the valve body for thrusting the seat ring toward the valve plug. A lip on the second annulus provides a seat-to-valve body seal. One of the sealing lips on the first-mentioned annulus normally provides the primary seat-to-valve plug seal by being compressed more and having a greater contact sealing area than the other lip. The seat-to-valve plug sealing lips are so oriented and cooperate in such a manner with the other parts of the seat ring construction that if the lip providing the primary seal should fail, allowing leakage, the primary seal will be transferred to the other lip by automatically increasing the compression of the other lip against the plug surface.

3,584,642

FLOAT CONTROLLED VALVE ASSEMBLY

Robert M. Wilson, Battle Creek, Mich., assignor to Dare Products Incorporated, Battle Creek, Mich.

Filed Aug. 5, 1968, Ser. No. 750,309
Int. Cl. G05d *9/02*
U.S. Cl. 137—270 **10 Claims**



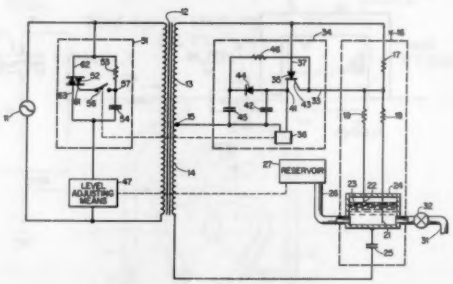
The present invention relates broadly to float valve assemblies and more specifically to such assemblies which are adapted for use with an inlet connection of either pipe-type or hose-type, and which have inlet orifice means for producing a nonsiphoning float valve assembly particularly adapted for use in stock watering tanks.

3,584,643

FLUENT MATERIAL LEVEL CONTROL SYSTEM

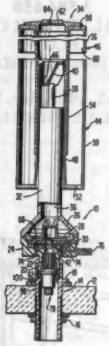
Lawrence A. Burke, Royal Oak, Mich., assignor to Standard International Corporation, Andover, Mass.

Filed Oct. 22, 1969, Ser. No. 868,408
Int. Cl. G05d *9/12*
U.S. Cl. 137—392 **11 Claims**



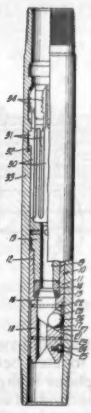
A system for detecting, indicating, and controlling the level of a fluent material in a container. This system applies alternating current to two electrodes in a container, the electrodes being parts of a voltage divider included in a bridge network. A solid-state circuit controls a pump and motor in response to the output of the bridge network to regulate the level of the material in the container.

3,584,644
TOILET TANK SUPPLY VALVE ASSEMBLY
Mayne C. Morken, Englewood, Colo., assignor to Twentieth Century Products Corporation, Englewood, Calif.
Filed Sept. 16, 1968, Ser. No. 759,900
Int. Cl. F16k *15/04, 31/24, 47/14*
U.S. Cl. 137—426 8 Claims



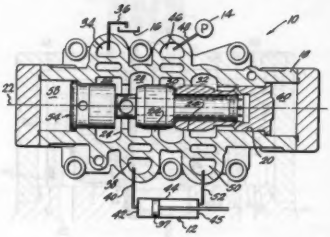
A check valve incorporated in the base of a ball cock valve assembly to prevent backflow of flush tank water into the potable water supply system. The ball cock valve includes separable upper and lower portions housing the ball cock valve member and the lower portion is connected to a shank at the base of the assembly. The check valve is positioned and held in place by the connection between the lower portion and the shank so as to be located unobtrusively and to allow the assembly to be installed without danger of defeating the antibackflow characteristic. A strainer is combined with a check valve.

3,584,645
FLOW CONTROL VALVE FOR WELLS
Gary A. Radig, Long Beach, Calif., assignor to Cook Testing Co., Long Beach, Calif.
Filed Dec. 30, 1969, Ser. No. 889,079
Int. Cl. F16k *15/04*
U.S. Cl. 137—454.2 8 Claims



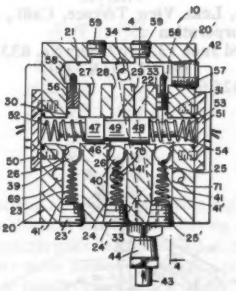
A tubular body for use in a well has a downward facing seat engaged by a ball which moves upward out of an inclined pocket on one side of the body. An offset axial flow passage on the other side of the body communicates with a chamber between the pocket and the seat, so that the ball is lifted to contact the seat by aspirator action upon excessive rate of flow through the passage. A sleeve encircling a portion of the body forms an end wall of the inclined pocket and seal means between the body and the sleeve above and below the pocket prevent leakage. Latches on spring fingers on the body hold the device in position within a well pipe.

3,584,646
SPOOL VALVE
Peter B. Olmsted, Ann Arbor, Mich., assignor to Olmsted Products Co., Ann Arbor, Mich.
Filed Dec. 4, 1969, Ser. No. 882,223
Int. Cl. F16k *11/10*
U.S. Cl. 137—596.18 9 Claims



A four-way spool valve in which the spool assembly is hollow and consists of two relatively telescoped spool members. The hollow interiors of the spool members communicate exclusively with transverse openings formed in the spool members and the spool members are movable relative to each other and to the valve casing so that they cooperate with the casing to define four valve positions.

3,584,647
SOLENOID PILOT DUMP COMBINATION DIRECTIONAL CONTROL VALVE
Robert E. Brown, 31707 Middleboro, Livonia, Mich.
Filed July 31, 1969, Ser. No. 846,562
Int. Cl. F16k *11/20*
U.S. Cl. 137—596.15 11 Claims



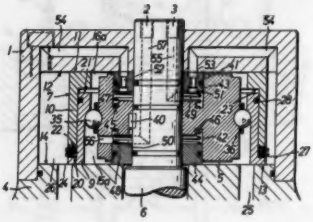
An oppositely spring loaded spool-type valve is also pilot-pressurized oppositely to control pressure liquid flow past three ball checks and through associated external lines to two hydraulic load actuating cylinders. One of these is a double-acting cylinder selectively pressurized at its opposite ends, and the other is a single-acting, spring return cylinder pressurized at only one end, these cylinders being parts of an external system controlled by the valve. Three two-way solenoid actuated valves are operated under the control of push-button switch means to govern the voiding of hydraulic liquid from the respective cylinder ends in certain phases of the operation of the valve; and hydraulic operating pressure is supplied by a motor powered pump. The operation of the pump is also responsive to pushbutton switch operation, whether by itself along or conjointly with the operation of the

pressure-dumping solenoid valves, in the said certain phases of operation. The pump pressurizes a valve manifold with which three ball check-governed passages are placed in communication under control of the valve spool.

3,584,648
HYDROSTATIC MACHINE

Walter Lubos, Sprockhoevel Westphalia, Germany, assignor to G. Duesterloh, G.m.b.H., Sprockhoevel, Westphalia, Germany

Filed Oct. 6, 1969, Ser. No. 863,871
Claims priority, application Germany, Oct. 5, 1968, P 18 01 154.3
Int. Cl. F16k *11/02*; F04c *17/02*
U.S. Cl. 137—625.21 **20 Claims**

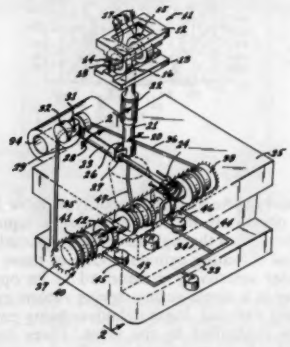


The valve plate of a reversible hydrostatic axial or radial piston machine surrounds an eccentric of the shaft and comprises two rings which are sealingly telescoped into each other and are biased apart so that each thereof engages an inner face of the housing. A first chamber of the housing which surrounds the valve plate communicates with one of the ports and a second chamber, defined by the valve plate, communicates with the other port. The valve plate alternately connects the fluid pressurizing spaces of the machine with the first and second chambers when the eccentric rotates with the shaft or when the housing rotates with reference to the eccentric.

3,584,649
RESILIENTLY DEFORMABLE INTERCONNECTION BETWEEN DRIVEN AND DRIVING MEMBERS IN SERVO VALVE

Clyde E. Cobb, Lake View Terrace, Calif., assignor to Bell Aerospace Corporation

Filed June 13, 1969, Ser. No. 833,032
Int. Cl. F16k *11/07*
U.S. Cl. 137—625.61 **4 Claims**

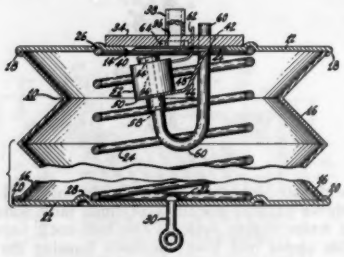


Disclosed is a jet-pipe-type servo valve wherein the feed tube is disposed at a right angle with respect to a flapper to which it is affixed and which is movable by a torque motor the armature of which is connected to the flapper. The feed tube has one end thereof affixed rigidly to the housing and the other end thereof terminating in a nozzle which is directed toward a receiver. The output ports of the receiver are connected to the end chambers of a cylinder within which a power control valve is slidably positioned so as to control the flow of fluid under pressure from a source thereof to an apparatus to be positioned such as an actuator. The connection between the jet pipe and the flapper is flexible.

3,584,650
REED ARMATURE VALVES FOR CONTROLLING FLUID FLOW

Donald G. Macaulay, Ypsilanti, Mich., assignor to RCA Corporation

Filed Oct. 22, 1968, Ser. No. 769,510
Int. Cl. F16k *31/06*
U.S. Cl. 137—625.65 **8 Claims**

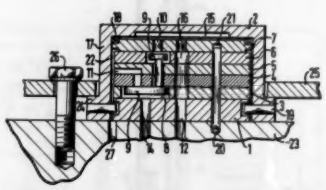


A valve is disclosed in which a magnetic reed of flat springlike configuration closes an orifice in a plate by lying against a flat surface of the plate that has the orifice therein. A magnetic field applied to the reed causes the end of the reed to flex away from the flat surface with a peeling action to open the first mentioned orifice and to flex the reed to a second position in which it may close a second orifice.

3,584,651
FLUID SWITCHING DEVICE

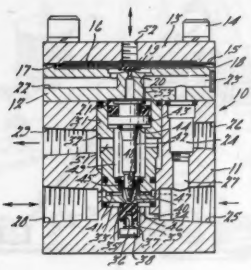
Hanns-Dieter Paschke, Olgaweg 6, Neckarsulm, Germany

Filed Oct. 22, 1969, Ser. No. 868,426
Claims priority, application Germany, Oct. 25, 1968, P 18 05 175.7
Int. Cl. F16k *11/04*
U.S. Cl. 137—625.66 **14 Claims**



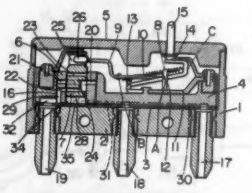
A hydraulic or pneumatic fluid-switching device comprising a stack of thin plates located between two spaced cover plates, the intermediate plates being formed with apertures or slots to accommodate individual switching elements of the plate-valve type each having a control pressure passage and supply-and-discharge passages, and including a pressure chamber at one end of the stack, connected to the main pressure supply so as to exert an end pressure on the stack to provide effective sealing between the individual plates. The effective area of the plate exposed to the fluid in the pressure chamber is greater than the effective pressure areas of the intermediate plates.

3,584,652
FLUID PRESSURE AMPLIFYING UNIT
Andrew B. Huntington, Royal Oak, and Daniel B. Abbott, Farmington, both of, Mich., assignors to Ross Operating Valve Company, Detroit, Mich.
Filed Oct. 30, 1967, Ser. No. 679,028
Int. Cl. F16k 11/10
U.S. Cl. 137—627.5 1 Claim



A diaphragm operated by relatively low signal pressure closes a pilot bleed port and pressure in a piston chamber builds up to operate a closed center crossover main valve, first closing the connection between a working port and exhaust and then opening a connection between the working port and a relatively high supply pressure port, thus providing positive digital output control in a fluid pressure unit.

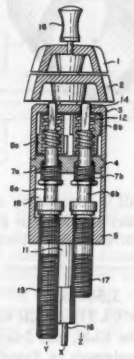
3,584,653
FLUID SWITCHING DEVICE
Yuzuru Kubo, Kyoto-shi, Japan, assignor to Tateisi Electronics Co., Kyoto-fu, Japan
Filed Oct. 8, 1968, Ser. No. 765,759
Claims priority, application Japan, Oct. 12, 1967, 42/65781
Int. Cl. F16k 31/56
U.S. Cl. 137—625.68 2 Claims



A fluid switching device in which first and second passageways of a sleeve arranged in a case are switched by a third passageway of a spool movable in the sleeve and controlled by a snap-action device which is operated quickly at dead center point and is movable so as to intersect by its direction of movement the third passageway whereby, producing no influence of fluid pressure in the passageways in the operating directions upon the spool, the first and second passageways are switched quickly by the spool; all passageways are made gastight or fluidtight with the result that the snap-action device is protected from corrosion and ensuing erroneous operation.

3,584,654
SANITARY MIXING FAUCET
Jean-Louis Deloye, 14 Rue Anatole, 13 Arles (Bouches du Rhone), France
Filed May 17, 1968, Ser. No. 729,962
Claims priority, application France, May 19, 1967, 107,31
Int. Cl. F16k 19/00
U.S. Cl. 137—637.2 8 Claims

The present disclosure relates to a mixing faucet construction adapted for use in wash basins, kitchen sinks, and the like, wherein the knobs or control handles for the hot and cold water valves, as well as the control knob for the drain outlet, are grouped in a novel manner and superposed in vertical alignment on a single common axis. By virtue of the novel arrangement of elements the hot and cold water control knobs may be actuated together, or independently of each other, as desired, by one hand and by employing a conventional turning motion. The novel associated control elements for the valve stems are contained within a housing unit located outside the normal water mixing chamber of the faucet and can be easily removed as a unit from the main housing body by unscrewing a single retaining element for servicing of the parts.



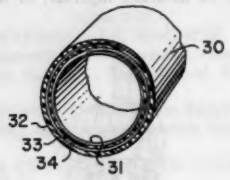
3,584,655
COMPOSITE TUBING
Bernard E. Frank, Rochester, and Howard J. Whitman, Fairport, both of, N.Y., assignors to General Motors Corporation, Detroit, Mich.
Filed July 3, 1969, Ser. No. 838,958
Int. Cl. F16l 9/18, 9/22
U.S. Cl. 138—109 10 Claims

A composite tubing arrangement having high resistance to corrosion and mechanical damage and having certain beneficial bending characteristics is formed of a coated, brazed double wall, inner tube and a concentric, coated, welded, outer tube which tightly engages the inner tube. A flare formed on the end of the tubing arrangement has the flare seat provided on the inner tube only.

3,584,656
MANUFACTURE OF POLYMERIC TUBULAR FILMS
Leendert Van Assendelet, and Bertus H. Zandstra, both of Arnhem, Netherlands, assignors to Algemene Kunstzij de Unie, N.V., Arnhem, Netherlands
Filed Feb. 14, 1969, Ser. No. 799,270
Claims priority, application Netherlands, Feb. 17, 1968, 68-02285
Int. Cl. F16l 11/04, 11/12
U.S. Cl. 138—141 9 Claims

A polymeric tubular film comprising a film wall made up of at least three polymeric layers which are alternately

formed of different compound polymers and which at least partially have a spiralling shape. At least one of the inner and



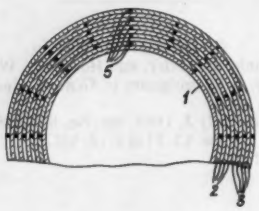
outer surfaces of the wall is formed by a single substantially homogeneous one-polymer layer. Also a process and an apparatus for the manufacture of such film are disclosed.

3,584,657

FLANGE FOR MULTILAYER CONTAINER

Karl-Heinz Dorr; Joachim Ehle, and Joachim Wartenberg, all of Essen, Germany, assignors to Fried Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Sept. 22, 1969, Ser. No. 859,828
Claims priority, application Germany, Sept. 21, 1968, P 17 76 108.9
Int. Cl. F16l *9/14*
U.S. Cl. 138—142 **11 Claims**



The provision of a substantially cylindrical sheet metal body with a flange, in which the sheet metal body is built up of a thin-walled basic pipe and a plurality of superimposed sheet metal layers while the flange proper is built up of additional sheet metal layers which have one end substantially flush with the one end of said sheet metal body, the flange forming superimposed layers being welded to each other and to said sheet metal body while decreasing stepwise in length, i.e. in the axial direction of said sheet metal body.

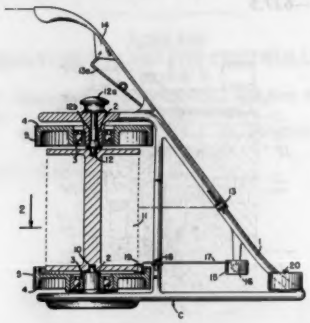
3,584,658

CIRCULAR LOOM

Eduardo De Almeida Ferreirinha, Porto, Portugal, assignor to Ed. Ferreirinha & Irmao-Motores E. Maquinas EFI, S.A.R.L., Porto, Portugal

Filed Dec. 8, 1969, Ser. No. 882,989
Claims priority, application Portugal, Dec. 10, 1968, 50,820
Int. Cl. D03d *37/00*
U.S. Cl. 139—16 **7 Claims**

The crossthread carrier of a circular loom has a frame on which a thread spool and two drums coaxial with the spool are mounted for independent rotation. The drums bear on rollers of a rotating magnetic carrier while the spool feeds the crossthread in a nontwisting manner through a thread guide on the frame. A centrifugally deactivated brake holds the spool against rotation when the crossthread carrier is stationary. A roller mounted on the frame at a distance from the



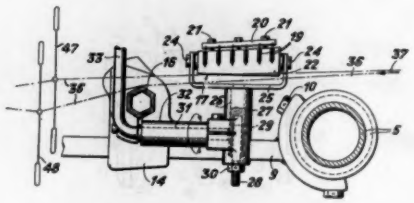
drums bears on a ring surrounding the warp threads to counteract centrifugal force acting on the carrier.

3,584,659

LOOM HAVING A STOP-MOTION MECHANISM

Erwin Pfarrwaller, Winterthur, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

Filed Sept. 30, 1968, Ser. No. 763,733
Int. Cl. D03d *51/28*
U.S. Cl. 139—369 **10 Claims**



The contact elements for the warp yarns are supported on holding devices which are mounted in cantilevered fashion on a single support tube. The support tube is located upstream of the contact elements with respect to the direction of movement of the warp yarns. The holding devices at the ends of the contact elements are pivotal in order to entrain the droppers of the broken warp yarns on the contact elements and thereby locate the broken warp yarns.

3,584,660

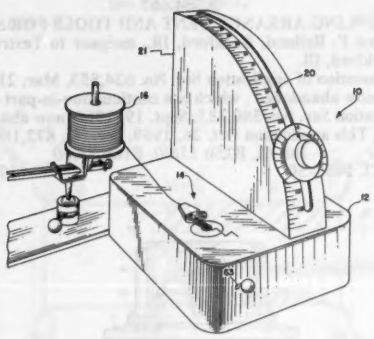
FORMING TOOL FOR RIBBON OR WIRE

T. O. Paine, Acting Administrator of the National Aeronautics and Space Administration with respect to an invention of Ken Anacker, Kirkland, Wash.

Filed Dec. 16, 1968, Ser. No. 784,544
Int. Cl. B21f *1/00, 23/00*
U.S. Cl. 140—105 **9 Claims**

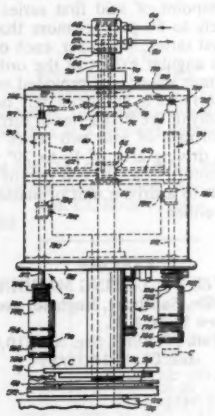
A device for bending metal ribbon or wire material at

selected angles with itself at selected intervals along its length. A common operating member provides the selective



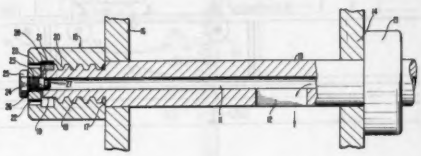
control over the length of these intervals and the angularity of the bends.

3,584,661
PURGING MACHINE
James H. Riesenberg, Amherst, N.Y., assignor to Consolidated Packaging Machinery Corporation, Buffalo, N.Y.
Filed Nov. 17, 1969, Ser. No. 877,068
Int. Cl. B65b *31/00*
U.S. Cl. 141—61 **12 Claims**



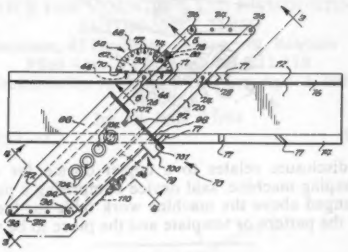
A machine for evacuating and purging food containers with nitrogen prior to the product filling operation. A rotatable turret is provided with a plurality of head assemblies, each of which is vertically aligned with a food container for evacuating and purging the same. Each head assembly is provided with valve means for establishing vacuum communication with the container and valve means for controlling the flow of nitrogen gas to the container after the vacuum communication is interrupted. The separate valve means are actuated by vertical reciprocable movement of the head assembly effected by a single cam and a follower associated with each head assembly.

3,584,662
RETAINING NUT FOR INFLATION SHAFT OF TIRE BUFFING MACHINE
Thomas W. Mattox, 7205 Marley Circle, Charlotte, N.C., and John R. Mattox, Route 3, Box 208-A, Charlotte, N.C.
Filed Dec. 4, 1969, Ser. No. 882,059
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—98 **8 Claims**



A retaining nut for the threaded end of a hollow inflation shaft in a tire-buffing machine or the like carries an adjustable valve element or seal which closes the bore of the inflation shaft so as to permit inflation of the tire on such shaft only when the retaining nut is fully and firmly seated in full screw-threaded engagement with the shaft. Less than full engagement of the screw threads will prevent inflation of the tire as a safety feature.

3,584,663
SUPPORT AND GUIDE MEANS FOR SAWS
Joseph R. Yacobucci, 65 Salisbury Ave., Blasdell, N.Y.
Filed Apr. 3, 1969, Ser. No. 813,107
Int. Cl. B27b *27/06*
U.S. Cl. 143—6 **10 Claims**

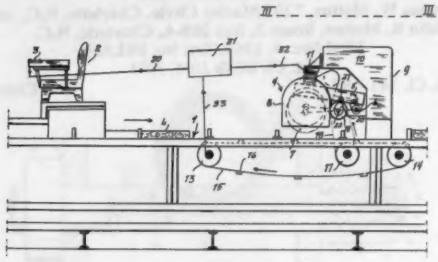


A power saw-supporting and guiding apparatus comprising a parallelogram linkage adapted to be pivotally mounted on a rigid upstanding wall of a miter box and having a plate for supporting a power saw. The support plate is provided with magnets for securing and retaining the power saw in properly oriented position. Vertically adjustable support legs are provided on opposite ends of the parallelogram linkage. A quadrant, having indicia imprinted thereon, is secured to the rigid upstanding wall and is provided with means for securing said parallelogram linkage to said quadrant at the desired angle.

3,584,664
APPARATUS FOR LENGTH ADJUSTING OR END TRIMMING MACHINES FOR USE IN SAW MILLS OR LIKE INSTALLATIONS
Bo Holmberg, and Nils Erik Hellstrom, both of Nyland, Sweden, assignors to Aktiebolaget Hammars Mekaniska Verkstad, Nyland, Sweden
Filed Feb. 5, 1969, Ser. No. 796,789
Int. Cl. B27b *5/28*
U.S. Cl. 143—41 **4 Claims**

An apparatus for length adjusting or end trimming machines in saw mills or like installations in which any of a plurality of normally passive trimming components may be activated selectively to trim a board or piece of lumber fed towards the trimming components via transverse conveying

means with the apparatus being particularly suitable for length trimming machines wherein a trimmer inspects the

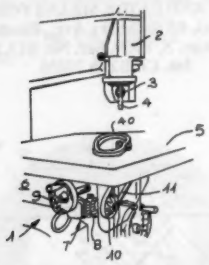


material arriving on the conveying means and actuates means for determining the eventual cutting of the material.

3,584,665
DOUBLE ROLLER COPIER DEVICE

Giuseppe Gemmani, Via Morecchiesi 40, 47037 Rimini (Province of Forli'), Italy

Filed Sept. 22, 1969, Ser. No. 859,963
Claims priority, application Italy, Nov. 13, 1968, 1806A/68
Int. Cl. B27c *5/02*
U.S. Cl. 144—145 **2 Claims**

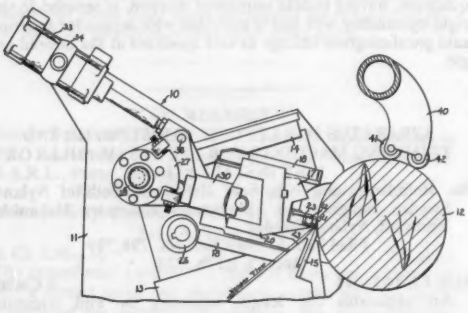


This disclosure relates to a copier device for use on a wood-shaping machine, said device comprising a pair of rollers arranged above the machine work table for the entrainment of the pattern or template and the piece to be worked.

3,584,666
APPARATUS FOR DETECTION OF OBSTRUCTION BETWEEN LOG AND ROLLER BAR ON VENEER LATHE ASSEMBLY

Marvin M. Jensen, Lewiston, Idaho, assignor to Potlatch Forests, Inc., Lewiston, Idaho

Filed Sept. 22, 1969, Ser. No. 859,868
Int. Cl. B27l *5/04*
U.S. Cl. 144—213 **4 Claims**

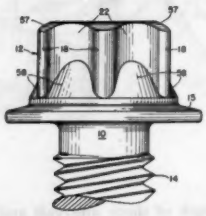


A detection system is included ii the control circuit for sensing the current flowing to a roller bar drive motor on a veneer lathe assembly. The detection system causes the roller bar to be moved away from the log when the current load exceeds a prescribed value indicating that an obstruction is wedged between the roller bar and the log being peeled.

3,584,667
COUPLING ARRANGEMENT AND TOOLS FOR SAME

Bernard F. Reiland, Rockford, Ill., assignor to Textron Inc., Rockford, Ill.

Continuation of application Ser. No. 624,853, Mar. 21, 1967, now abandoned , which is a continuation-in-part of application Ser. No. 580,223, Sept. 19, 1966, now abandoned.
This application Oct. 26, 1969, Ser. No. 872,180
Int. Cl. B25b *15/00;* **F16b** *23/00*
U.S. Cl. 145—50 **17 Claims**

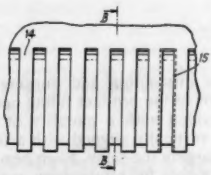


A torque-transmitting or coupling arrangement and tools for same consists of a body portion having a first series of similar arcuately curved surfaces with their centers of curvature located at the corners of a regular hexagon and which surfaces are disposed outwardly of such centers with respect to the axis of the body. A second series of surfaces curved oppositely to those of the first series and alternating therewith extend substantially to the sides of said hexagon midway between the corners thereof while the ends of the second series merge tangentially with adjacent ends of the first series. The radius of curvature of the second series is from two to three times that of the first series whereby the midpoint of said second series is closer to the axis of said body than the midpoint of said first series by an amount equal approximately to 50 percent more than the length of the radii of said first series. Moreover, each of the first series of surfaces has an angular extent of the order of 20 to 25° whereby the resultant shear area provided outwardly of the second series of surfaces is approximately double the shear area formed inwardly of the first series of surfaces. Also, contiguous surface portions of said two series of surfaces are formed defining a driving area of 10 to 20° whereby higher torques than heretofore possible can readily be transmitted from a driving unit to a driven unit of mating configuration without damaging either.

3,584,668
KNIVES IN CUTTING MACHINES

Richard E. G. Neville, Salisbury, England, assignor to A.M.F. Incorporated, New York, N.Y.

Filed Feb. 27, 1969, Ser. No. 810,079
Int. Cl. A01d *55/18*
U.S. Cl. 146—118 **7 Claims**



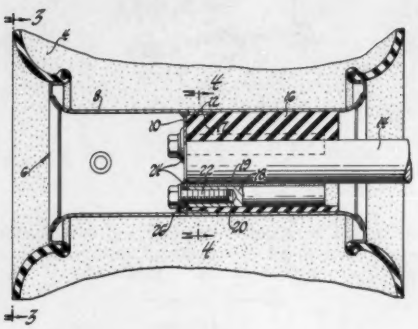
The knife for a cutting machine comprises a plate having one bevelled cutting edge and a plurality of grooves formed at right angles to the cutting edge in the face of the knife which is not bevelled thereby providing a crenellated cutting edge.

3,584,669

HUB AND AXLE ASSEMBLY

Merritt S. Cooley, Davisburg, Mich., assignor to Merritt Manufacturing Co., Pontiac, Mich.

Filed Jan. 10, 1969, Ser. No. 790,210
Int. Cl. B60b 9/12
U.S. Cl. 152—52 6 Claims



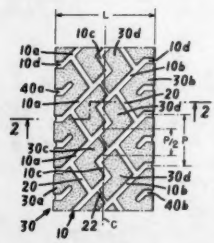
A hub and axle assembly including a hub having a cylindrical opening with a transverse connector mounted therein and secured to the inner wall thereof. The end portion of an axle is received in the cylindrical opening and is nonrotatably secured to the connector. A plastic load-distributing and torque-transmitting member is received in the cylindrical opening and bonded to the inner wall thereof with an axial opening therein receiving the end portion of the axle. The axle and torque-transmitting member are secured together against relative rotation whereby torsional forces are transmitted between the axle and hub through the torque-transmitting member.

3,584,670

PNEUMATIC TIRE

Henri Verdier, Beauregard-L'Eveque, France, assignor to Compagnie Generale Des Etablissements Michelin, raison Sociale Michelin & Cie, Clermont-Ferrand (Puy-de-Dome), France

Filed Feb. 28, 1969, Ser. No. 803,357
Claims priority, application France, Mar. 4, 1968, 142,326
Int. Cl. B60c 11/00
U.S. Cl. 152—209 7 Claims



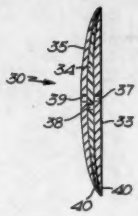
A heavy-duty road tire of the radial type is formed with a substantially flat transverse profile. The tire has a tread formed with substantially parallel zigzag grooves, each extending obliquely from one edge of the tread to the other. The zigzag grooves are closer together at the center of the tread than at the edges of the tread and are connected by additional grooves.

3,584,671

SELF-SEALING VALVE FOR INFLATABLE OBJECT

Donald J. Kampa, 994 West Montana, St. Paul, Minn.

Filed Mar. 24, 1969, Ser. No. 809,610
Int. Cl. B60c 29/00; F16k 7/10
U.S. Cl. 152—429 9 Claims



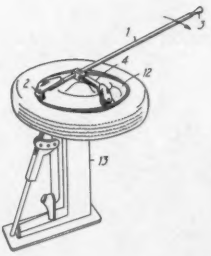
A self-sealing valve for an inflatable object such as a vehicle tire or tube in which the valve is comprised of an aperture through the wall of the casing of the tire or tube and includes a thin flexible and deformable piece of material sealed to the inner wall of the casing or tube and having an aperture therein offset from the aperture in the casing or tube which will be displaced upon entrance of a hollow tube through the apertures in the casing and thin piece of material to allow entrance of air into the casing. The pressure of the inflating air or medium introduced through the hollow tubular member will cause the thin flexible and deformable piece of material to conform to the inner wall of the casing to seal the aperture therethrough.

3,584,672

DEVICE FOR MOUNTING AND DISMOUNTING AUTOMOBILE TIRES

Victor Duquesne, 42 Quellinstr, Antwerpen, Belgium

Filed Apr. 2, 1969, Ser. No. 812,719
Claims priority, application Belgium, Apr. 4, 1968, 47,823
Int. Cl. B60c 25/04
U.S. Cl. 157—1.3 3 Claims



The present device is for mounting and dismounting tires on wheels using a lever having a tire mounting element on one end and a tire dismounting element on the other end and an arm for supporting the lever having rotary means for riding on the wheel rim upon movement of said lever in a circle.

3,584,673

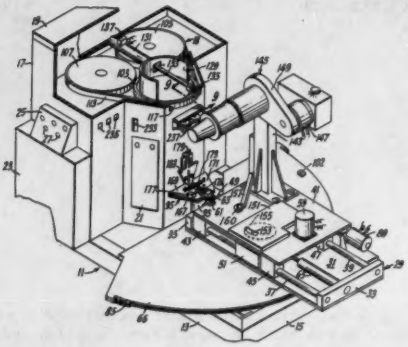
METHOD AND APPARATUS FOR DETREADING TIRES

Walther Ernst Fritz Lehmann, Costa Mesa, Calif., assignor to AMF Incorporated

Filed Sept. 13, 1968, Ser. No. 759,638
Int. Cl. B29h 21/08
U.S. Cl. 157—13 17 Claims

This invention relates to a method and apparatus for sizing and modifying the circumferential surface of a tirelike object by removal of at least part of the surface material. The inven-

tion is particularly applicable to a method and apparatus for sizing and modifying the variable circumferential surface of a tire in a substantially completely automated manner to remove tread rubber therefrom. The method is accomplished by the apparatus in a series of programmed sequential steps in response to initiation by an operator.



3,584,674

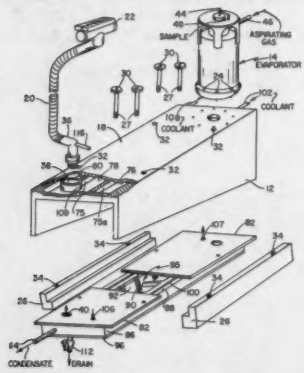
SAMPLE CONCENTRATION APPARATUS

Gaillard R. Nolan, Acton, and John D. Kopek, Malden, both of, Mass., assignors to Fisher Scientific Company, Pittsburgh, Pa.

Filed May 22, 1969, Ser. No. 826,917

Int. Cl. B01d *1/16, 1/30;* **G01n** *11/00;* **B01d** *3/00*

U.S. Cl. 159—4 **14 Claims**



Apparatus for concentration of a sample, to be delivered to a remote analysis mechanism, including a vertically mounted, quartz-lined heater, a water cooled condenser which is teflon-coated to eliminate cross-contamination and which has a sandwichlike construction to facilitate disassembly and cleaning, and an extended corrugated teflon tube for transporting the sample to the remote analysis mechanism.

3,584,675

MULTICOLORED FRAME FOR FOLDING FURNITURE

Donald J. Borichevsky, Wells, Vt., assignor to The Telescope Folding Furniture Co., Inc., Grantville, N.Y.

Filed Mar. 12, 1969, Ser. No. 806,560

Int. Cl. A47c *7/02*

U.S. Cl. 160—371 **3 Claims**

The frame is constructed with a tubular extrusion which is made with a cord section and a tube section which are integral with each other. The extrusion is formed in one-piece and the tube section is made up of a larger diameter than the cord section. In addition, the tube and cord sections are made of different colors or shades of the same color so as to impart a decorative appearance to the frame.

3,584,676

METHOD FOR THE MANUFACTURE OF SINGLE CRYSTALS

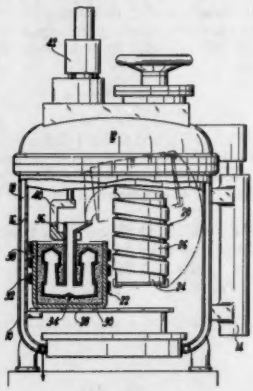
Francis Busquet, Saint-Martin-Le-Vinoux, and Francis Forrat, Seyssinet-Pariset, both of, France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed Aug. 11, 1969, Ser. No. 848,974

Claims priority, application France, Aug. 23, 1968, 163975

Int. Cl. B22d *25/06*

U.S. Cl. 164—60 **2 Claims**



The molten substance is poured into a cluster of moulds having their lower ends connected to a feeding funnel. The cluster is slowly lifted out of a liquid whose temperature is higher than the melting point: as a result the isothermal planes in the substance are strictly horizontal, undistorted and at the same level in all moulds.

3,584,677

FORMATION OF CONTINUOUS CASTING STARTER PLUGS

Roderic Hugh Hammerton, Nechells, England, assignor to Foseco International Limited, Birmingham, England

Filed Sept. 18, 1968, Ser. No. 760,586

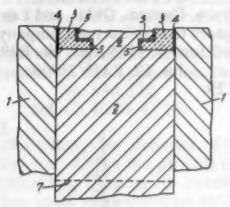
Claims priority, application Great Britain, Sept. 26, 1967, 43800/67

Int. Cl. B22d *11/08*

U.S. Cl. 164—82 **7 Claims**

In order to form a continuous casting starter plug a disin-

tegratable refractory shape is placed into the last molten metal in the mold at the end of a casting cycle, allowed to



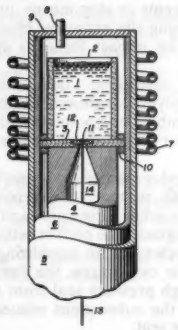
disintegrate, the disintegration products are removed and the thus formed plug cut from the strand.

3,584,678

ORIFICE PLATE FOR SPINNING FINE DIAMETER WIRE

Lawrence F. Rakestraw, Raleigh, N.C., assignor to Monsanto Chemical Company, St. Louis, Mo.

Filed July 28, 1969, Ser. No. 845,336
Int. Cl. B22c *1/00*; B22d *11/00*
U.S. Cl. 164—273 3 Claims



High density, high purity polycrystalline and single crystal beryllium oxide orifice plates have been successfully employed in wire manufacturing processes which comprise spinning molten metals through fine diameter orifices as molten metallic jets.

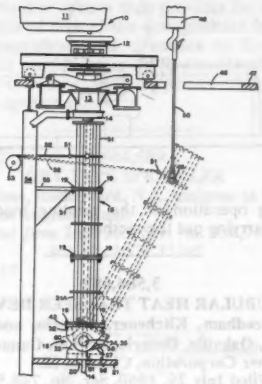
3,584,679

CONTINUOUS CASTING APPARATUS

William G. Wilson, Beaver Falls, Pa., assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed Oct. 22, 1968, Ser. No. 769,657
Int. Cl. B22d *11/12*
U.S. Cl. 164—283 7 Claims

An improved continuous casting apparatus featuring an aftercooler that can be pivoted from its normally vertical operating position of alignment with the mold to an inclined



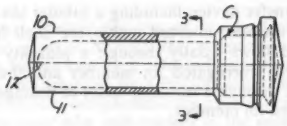
position spaced-apart from the mold so as to permit easy removal and replacement of the aftercooler.

3,584,680

HOLLOW GREEN SAND CORES

Leo J. Le Blanc, Birmingham, and Ganes T. Worthy, Anniston, both of, Ala., assignors to The Mead Corporation

Division of Ser. No. 713,037, Pat. No. 3,496,968 filed Nov. 3, 1969, Ser. No. 873,443
Int. Cl. B22c *9/10, 13/12*
U.S. Cl. 164—369 2 Claims



A multipart green sand foundry core, preferably but not necessarily hollow, in which the parts are joined together solely by the adherence of sand in areas thereof which are brought together. Such cores are formed of green foundry sand without the use of any addition binder, gasing or the like.

3,584,681

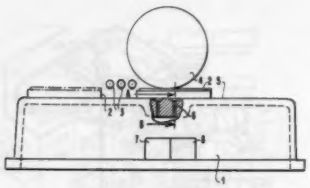
METHOD AND APPARATUS FOR REGULATING THE TEMPERATURE OF A FORM BED RUNNING ON GUIDEWAYS IN A FLAT BED LETTER PRESS PRINTING MACHINE

Hubert H. A. Sternberg, Heidelberg, Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany

Filed Mar. 28, 1969, Ser. No. 812,572
Claims priority, application Germany, Mar. 30, 1968, P 17 61 076.3
Int. Cl. F25b *13/00*
U.S. Cl. 165—2 12 Claims

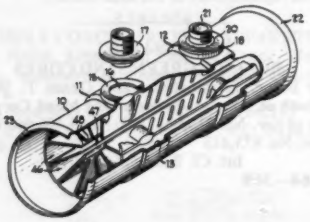
Method of regulating the temperature of a form bed running on guideways in a flat bed letter-press printing machine includes measuring the temperature of the form bed, comparing the measured form bed temperature to a given nominal value, and selectively precooling and preheating lubricant supplied under pressure and from below to the

guideways for the form bed so that the temperature of the form bed corresponds substantially to the given nominal



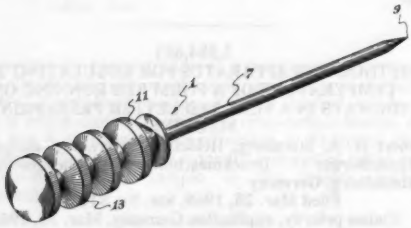
value during operation of the printing machine; and apparatus for carrying out the method.

3,584,682
TUBULAR HEAT TRANSFER DEVICE
Harry W. Leedham, Kitchener, Ontario, and Desmond M. Donaldson, Oakville, Ontario, both of, Canada, assignors to Borg-Warner Corporation, Chicago, Ill.
Filed July 29, 1968, Ser. No. 748,525
Int. Cl. F28d *9/02*
U.S. Cl. 165—164 **15 Claims**



A heat transfer device including a tubular shell and a corrugated fin member inserted within the shell in which the cooling fluid flows axially through a plurality of passages formed by the corrugated fin member and the fluid to be cooled flows through a tortuous series of passages formed by the corrugated fin member.

3,584,683
THERMAL SPIKE
Jerry D. Gordon, 10749 East 11th St., Tulsa, Okla.
Filed Apr. 25, 1969, Ser. No. 819,241
Int. Cl. F28f *7/00*
U.S. Cl. 165—185 **4 Claims**



A thermal spike for improving the conduction of heat into the interior of a piece of meat during cooking has a protruding portion characterized by a plurality of discs of the same diameter that provide increased surface area and also a handgrip, the discs being spaced apart by annular portions that increase in diameter in the direction of the point. A limiting washer limits penetration of the spike, and the spike has a rounded end for pushing against. The spike is a highly conductive metal clad with stainless steel.

3,584,684
RETRIEVABLE PACKER APPARATUS FOR USE IN A WELL BORE AND METHOD OF PROLONGING ITS OPERATING LIFE
Merlin F. Anderson, Duncan, Okla., and Lee E. Perkins, Houma, La., assignors to Halliburton Company, Duncan, Okla.
Filed June 2, 1969, Ser. No. 829,388
Int. Cl. E21b *23/00*
U.S. Cl. 166—129 **11 Claims**

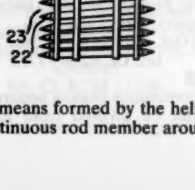
Retrievable packer apparatus for use in a well bore including an equalizing valve designed to release pressure in two stages. A ratchet mechanism prevents the relaxation of compressed packer elements until the complete release of upper slip segments has occurred. A floating sleeve, in conjunction with spaced abutments or stop means, provides a mechanism for radially collapsing slip expander blocks and, if necessary, applying a lifting or impact force to upper slips to ensure their release.

A selectively releasable ball coupling provides a mechanism for applying longitudinal force through a series of telescopingly assembled components and selectively releasing the components for longitudinal movement relative to each other.

An equalizing valve carried by a packer mandrel is pressure balanced with respect to differential pressure acting beneath the set packer. Pressure acting beneath the set packer tends to augment the packer setting force.

A method of releasing an equalizing valve wherein the valve is released in two stages, the first stage involving the separation of a high pressure seal from a valve seat, and the second involving the subsequent release of a low pressure seal from the valve seat.

3,584,685
TUBULAR SCREEN
David M. Boyd, Clarendon Hills, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Dec. 30, 1968, Ser. No. 787,835
Int. Cl. B01d *29/10*
U.S. Cl. 166—231 **5 Claims**



A tubular screen means formed by the helical winding and attachment of a continuous rod member around a plurality of

spaced longitudinal bar members in a manner sufficient to provide a continuous helical slot opening of continuously increasing slot width.

3,584,686

PREVENTION OF CALCIUM SULFATE SCALE IN A WATERFLOODING PROCESS

Richard S. Fulford, Tulsa, Okla., assignor to Cities Service Oil Company

Continuation-in-part of application Ser. No. 664,303, Aug. 30, 1967, now abandoned. This application Dec. 8, 1969, Ser. No. 883,332

Int. Cl. E21b *43/20*

U.S. Cl. 166—275 **12 Claims**

A method of minimizing the deposits of calcium sulfate near the production well during the process of secondary oil recovery by waterflooding utilizing an injection fluid whose mineral content has been supplemented by the addition of salts. In order to prevent calcium sulfate from precipitating near the reduced pressure area of the production wellbore during waterflooding the total mineral salt content of the fluid drive is adjusted to a high enough concentration so that the solubility of $CaSO_4$, which dissolves in the fluid drive as it passes through the formation, does not decrease as the pressure on the waterflood decreases. Sodium chloride may be taken alone or in combination with controlled amounts of mineral salts, such as calcium chloride, sodium sulfate, magnesium chloride, or sodium bicarbonate to adjust the mineral content of the fluid drive.

3,584,687

INHIBITION OF DEPOSITS FROM WATER OR BRINE IN UNDERGROUND FORMATIONS

James R. Stanford, Sugarland, and Paul G. Vogelsang, Jr., Houston, both of, Tex., assignors to Nalco Chemical Company, Chicago, Ill.

Division of Ser. No. 682,618, Nov. 13, 1967 filed Feb. 3, 1970, Ser. No. 8,437

Int. Cl. E21b *43/22*

U.S. Cl. 166—279 **5 Claims**

Phosphate mixed esters of hydroxy amines containing less than eight carbon atoms in hydrocarbon groups attached to the amino nitrogen and hydroxy hydrocarbons containing at least six carbon atoms in a hydrocarbon group thereof are prepared and used to inhibit deposits from water or brine in underground formations.

3,584,688

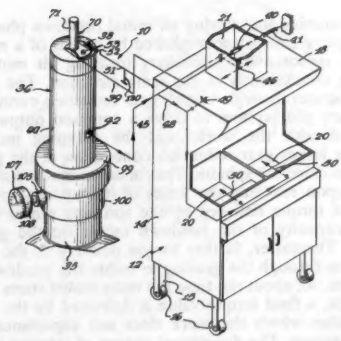
METHOD FOR CONTROLLING FIRES

Donald Lee Duncan, Oak Lawn, and George A. Utesch, Jr., Chicago, both of, Ill., assignors to General Fire Extinguisher Corporation

Filed Aug. 4, 1969, Ser. No. 847,162

Int. Cl. A62c *3/00*

U.S. Cl. 169—2 **7 Claims**



A method or system for controlling fires is provided particularly for use in areas where food is prepared using fats and greases. The method or system provides for detecting flame or excessive heat, the presence of which automatically releases a high volume flow of extinguishant over at least one of several critical areas of the fire so as to rapidly eliminate any flame and rapidly reduce the temperature in the critical areas. The method or system then provides for automatically reducing the rate of flow of the extinguishant from the same source of extinguishant and continues to flow the extinguishant at said reduced rate for a considerable period of time sufficient to reduce the temperature of the area below the flame auto-ignition point.

3,584,689

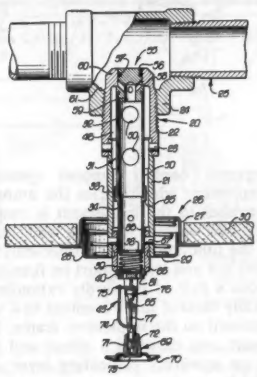
DRY-TYPE SPRINKLER

Charles F. Willms, Rutherford, N.J., assignor to Norris Industries, Inc., Los Angeles, Calif.

Filed June 26, 1969, Ser. No. 836,755

Int. Cl. A62c *35/00*

U.S. Cl. 169—17 **9 Claims**



A dry-type sprinkler for use in fire protection systems wherein fluid passage through the sprinkler is closed by a valve at the intake end until released by a heat responsive mechanism, characterized by a floating inner tube assembly which automatically compensates for dimensional changes in length of the inner tube with respect to the outer tube when subjected to ordinary thermal effects, and by which loads are isolated within the sprinkler head assembly which includes the heat responsive mechanism, and no loads are transmitted through the inner or outer tubes which might affect the sealing function of the valve.

3,584,690

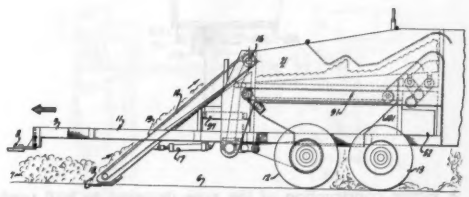
SEPARATOR FOR TOMATO HARVESTER

Jerry A. Taylor, P.O. Box 669, Dixon, Calif.

Filed July 25, 1968, Ser. No. 747,653

Int. Cl. A01d *17/08*

U.S. Cl. 171—27 **6 Claims**



A tomato harvester carriage has an open return, separating conveyor operating over a trash receiver and two groups of interspersed walker plates disposed over the conveyor, the walker plates at their forward end being mounted for sub-

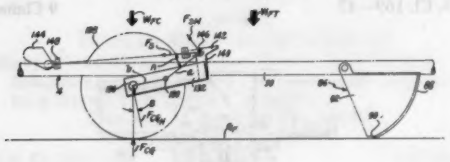
stantial reciprocation and each group being separately rotated at the rearward end, the phase of rotation of one group being adjustable with respect to the phase of rotation of the other group. The walker plates have substantially horizontal and also inclined upper edges that are serrated. A loading conveyor carries tomato plants to the walker plates, which shake the tomatoes off of the vines onto the separating conveyor.

3,584,691

CENTRAL SUPPORT SYSTEM FOR LAND SMOOTHING IMPLEMENTS

Aaron G. Reynolds, 2219 North 12th, McAllen, Tex.

Filed Oct. 31, 1968, Ser. No. 772,108
Int. Cl. A01b *63/111*
U.S. Cl. 172—239 **8 Claims**



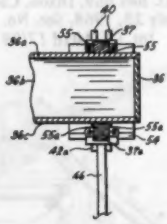
A supplemental central support system for a land smoothing implement which varies the amount of yieldable support it furnishes to the implement in response to irregularities in the soil surface contour and texture in a way beneficial to the function of that implement, furnishing more support on soft soil and less support on firm soil. The support system includes a pair of forwardly extending support arms pivoted centrally thereof for movement in a vertical plane to a bracket mounted on the implement frame, the forward end of each support arm carrying a wheel and the rear end of each having an upwardly projecting lever arm thereon to which a spring is connected. A varying portion of the implement weight is supported by the central support wheels and the associated support arms, the springs and the lever arms being so arranged that when the support wheels move progressively downward relative to the implement frame a progressively increasing upward force is exerted on the frame.

3,584,692

DIRT RIPPER

Clyde A. Fasse, Box 247, Riley, Kans.

Filed Nov. 29, 1968, Ser. No. 779,812
Int. Cl. A01b *13/08*
U.S. Cl. 172—449 **1 Claim**



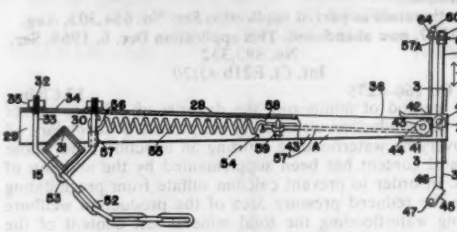
A ripper construction of the type designed to pull teeth through hard soil or mixtures of soil and rock, the teeth each pivotably mounted on a box beam by means of ball and socket joints on top of and below the beam, the beam itself mounted on a tractor frame, the sides thereof, by another pair of ball and socket joints.

3,584,693

SPRING-LOADED DEVICE FOR HARROW SECTIONS

Rheinhard Bobrowski, Morris, Manitoba, Canada, assignor to Inland Steel & Forgings Ltd., Winnipeg, Manitoba, Canada

Filed Aug. 26, 1969, Ser. No. 853,161
Int. Cl. A01b *65/06*
U.S. Cl. 172—462 **4 Claims**



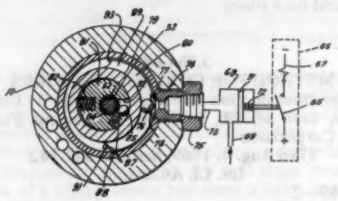
A vertical rod extending downwardly through a pivot bearing on the end of the drawbar arm and is connected to the harrow section. A cable is secured to the top of this rod and extends downwardly to the drawbar arm, around a sheave thereon, and along the arm to a tension spring secured to the arm. Rotation of the drawbar arms downwardly thus extending the spring and transferring this pressure via the cable to the top of the rod which in turn presses the harrow sections into the ground.

3,584,694

TORQUE DELIVERY SIGNAL CONTROL MECHANISM FOR A TWO-SPEED NUT-RUNNING TOOL

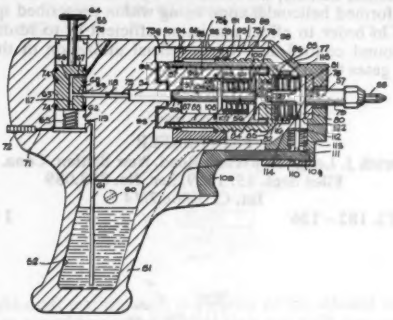
William K. Wallace, Barneveld, N.Y., assignor to Chicago Pneumatic Tool Company, New York, N.Y.

Filed Nov. 5, 1969, Ser. No. 874,270
Int. Cl. B25b *23/14*
U.S. Cl. 173—20 **7 Claims**



A nut-running tool having an initial rundown phase and a final torquing phase, accomplished by means of a main rundown air motor and an auxiliary torquing air motor, both operating concurrently in the same direction. The rundown motor operates through a small gear reduction connection in a planetary gear system to drive a common output spindle connected with the work; and the torquing motor acts through a larger gear reduction connection in the planetary gearing to drive the spindle. The rundown motor stalls on the gearing upon reaching the limits of its capacity, permitting continued torque delivery by the torquing motor until the holding capacity of the rundown motor on the gearing is reached. Thereafter, further torque delivery of the torquing motor acts through the gearing to rotate the rundown motor backwards. At about the time the main motor starts to rotate backwards, a final torque value is delivered by the auxiliary motor, after which the work does not experience further torque increase. The directional change of rotation is used to cause actuation of control mechanism which is operable to signal a circuit to terminate operation of the tool after delivery of final torque has occurred.

3,584,695
POWER TOOLS
John Hilton Turnbull, Stourport on Severn, England, assignor to GKN Screws & Fasteners Limited, Smethwick, Warley and The Plessey Company Limited, Deford, England
Filed Feb. 17, 1970, Ser. No. 12,071
Claims priority, application Great Britain, Feb. 18, 1969, 8655
Int. Cl. B25d *9/11*; B25b *21/02*
U.S. Cl. 173—107 15 Claims

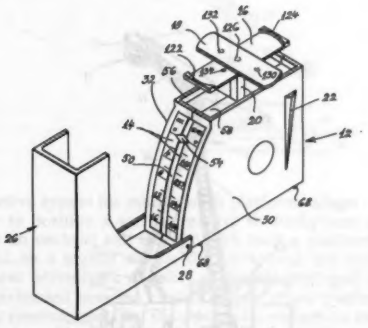


The specification discloses a power hand tool, i.e. a tool arranged to be hand held but having a power-driven working element which is arranged to be operated by high-pressure gas produced by the explosion of an explosive charge. The tool includes control means arranged so that the working element can either be impacted and rotated or impacted only or rotated only. In one embodiment of the tool the order in which the working element can be impacted and rotated may be reversed. The preferred explosive charge is a liquid monofuel.

ERRATUM

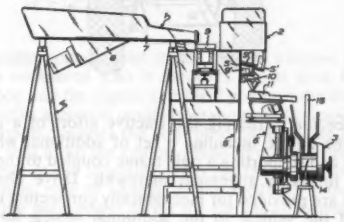
For Class 175—300 see:
Patent No. 3,585,301

3,584,696
SPRING SCALE WITH PROTECTIVE COVER
Bernard Eblowitz, 2880 Lee Place, Bellmore, Long Island, N.Y.
Filed May 21, 1969, Ser. No. 826,425
Int. Cl. G01g *21/28*
U.S. Cl. 177—127 3 Claims



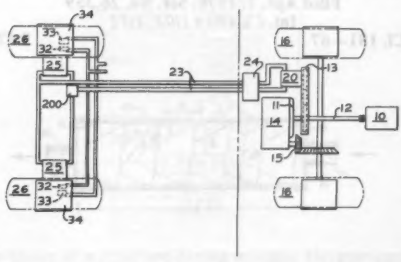
A diet or weight watching and postal scale made of lightweight plastic parts including a two part casing and links assembled between the casing parts, a platform and a shank depending from the platform into the casing parts to be journaled by parallel links in a manner having but line contact for frictional engagement therewith and support by a measuring spring assembled within the linkage and connected to the lower end of the platform shank to support the same and the linkage. A measuring extension extends from one of the links to a slot in the front of the casing parts with a pointer that runs over the measuring scale. A platform is provided with a fixed part and a turnable part adapted to increase the supporting area. A cover is pivoted upon the scales and is adapted to be extended upwardly over the platform and front of the casing parts to enclose the same and be held in its closed position by the engagement of the spring biased platform with the inner face thereof.

3,584,697
MACHINE FOR PORTIONING OUT ARTICLES BY WEIGHT
Claes Otto Sigfrid Danielson, Malmo, and Hans-Ake Christian Gram, Halsingborg, both of, Sweden, assignors to Helsingborgs Spikfabriks AB, Halsingborg, Sweden
Filed Sept. 17, 1968, Ser. No. 760,328
Claims priority, application Sweden, Sept. 29, 1967, 13,392/67
Int. Cl. G01g *13/16, 13/08*; B65b *35/58*
U.S. Cl. 177—59 9 Claims



A machine for portioning out nails, screws or like articles of magnetically attractable material from a supply of such articles to an outlet where the articles are packaged, has conveyors and a weighing machine cooperating with them for rapid portioning out of definite article portions minus a small number of articles which at the end of the rapid portioning operation are portioned out individually by the weighing machine for supplementing said definite portion, a magnet chute for orienting articles falling through the chute from the weighing machine or from a conveyor cooperating with said weighing machine, and a packaging unit for packaging the article portions in cartons or boxes.

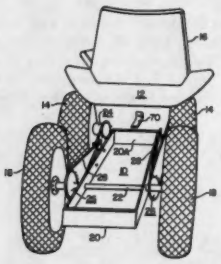
3,584,698
HYDROSTATIC SCRAPER WHEEL DRIVE
Robert V. Larson, Peoria; James E. Scheidt, Joliet, and Sebald K. Stahl, Peoria, all of, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed July 23, 1968, Ser. No. 746,971
Int. Cl. B60k *25/00*; B62d *59/00*
U.S. Cl. 180—14A 5 Claims



A hydrostatic assist for driving the normally nondriven wheels of a vehicle in which the hydrostatic assist is con-

trolled by slip in the drive train or the driven wheels for better tractive effort and most efficient operation. The slip sensed for control may be the slip between the normally driven wheels and the ground or the slip in a nonpositive coupling portion of the drive line between the vehicle engine and the driven wheels and controls the power which is supplied to the nondriven wheels through a hydrostatic loop.

3,584,699
VEHICLE TRACTION DEVICE
Joseph A. Urick, 5036 Northlawn Drive, Murrysville, Pa.
Filed July 16, 1969, Ser. No. 842,227
Int. Cl. B62d *59/04*
U.S. Cl. 180—15 **3 Claims**

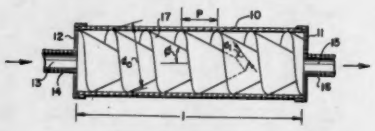


A device for increasing the tractive effort of a powered vehicle, the device including a set of additional wheels attached to and supporting a rigid frame coupled to the vehicle in axial, following alignment therewith. Drive chains and sprockets are provided for mechanically connecting the drive wheels of the vehicle to the additional wheels for driving same when power is applied to the drive wheels of the vehicle.

3,584,700
SOUND ABSORBING HONEYCOMB PANEL
Peter L. Jurisich, 5225 Bindewald Road, Torrance, Calif.
Filed June 10, 1969, Ser. No. 832,006
Int. Cl. E04b *1/86*
U.S. Cl. 181—33 **9 Claims**

An improved laminate having a sound absorbing honeycomb core, and process therefor comprising, a honeycomb-spaced core with sound absorbing material in the spaces such as fibrous glass or cellular foam and wherein the edge regions of the walls of the honeycomb core at either major surface are turned to provide a flange for the maintenance of sound absorbing material within the spaces, and additionally a broader surface area to contact materials thereon.

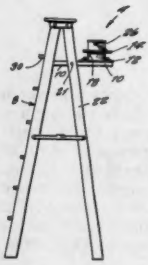
3,584,701
SOUND AND RESONANCE CONTROL DEVICE
Michael W. Freeman, 401 David Whitney Bldg., Detroit, Mich.
Filed Apr. 7, 1970, Ser. No. 26,359
Int. Cl. F01n *1/02, 1/12*
U.S. Cl. 181—67 **9 Claims**



Sound and resonance apparatus for systems engaged in dissipating gases under varying temperature, pressure and velocity conditions.

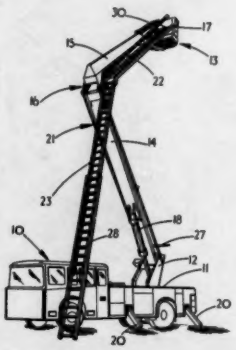
The present invention is directed to control systems adapted to muffle and/or silence the explosive sound of gas emulsion under elevated temperature, pressure and high velocities as in exhaust gases emitted from various engines such as combustion engines, industrial tubular structures, firearms and the like by directing said gas into a muffler device or system having a concave end of a helicoidally formed body by casting or provided by a strip wound into a number of helicoidal cones; namely, and helicoidal cones having their transverse surfaces inclined, pitched or sloped at an angle within controlled limits to the axis of the helicoid and distance between the base and apex of each of said helicoid cones; namely, the frustums, by which is meant a spatially formed helicoidal cone being within prescribed spaced limits in order to effect maximum efficient as to resonance and sound control and the beneficial utilization of the exhaust gases to do work.

3,584,702
PAINT SAFER
Frederich J. Lang, 16 Recana Road, New Britian, Conn.
Filed Sept. 15, 1969, Ser. No. 858,089
Int. Cl. E06c *7/14*
U.S. Cl. 182—126 **1 Claim**



A platform adapter to be removably secured to a folding support on a stepladder and provided with means to hold a paint can in place to prevent the can from toppling off when the ladder is moved or in use.

3,584,703
HYDRAULIC PLATFORMS
Kenneth Henry Lane, Wolverhampton, England, assignor to Simon Engineering Dudley Limited, Dudley, England
Filed June 2, 1969, Ser. No. 829,171
Claims priority, application Great Britain, June 7, 1968, 27227/68
Int. Cl. E06c *5/04*
U.S. Cl. 182—67 **11 Claims**



A hydraulic platform comprising a boom assembly movable between substantially horizontal and vertical dispositions

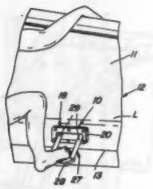
and mounting a platform cage at its free end, and a ladder extending alongside at least part of the boom assembly between the cage and a position above the boom-supporting surface, the ladder being extensible from said position into contact with the ground or other convenient surface which provides a landing area.

3,584,704

BOARDING STEP FOR BOATS

John A. Eckmann, Pompano Beach, Fla., assignor to Chris-Craft Industries, Inc., Pompano Beach, Fla.

Filed Sept. 24, 1969, Ser. No. 860,479
Int. Cl. E06c *9/04*
U.S. Cl. 182—90 **11 Claims**



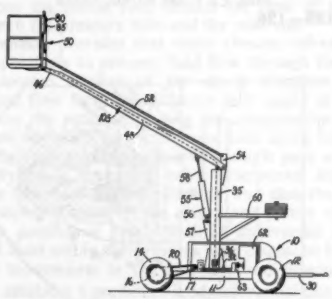
A light-draft marine craft, preferably of the inboard motor type, has a prefabricated boarding step unit built into one or both of the beam sides thereof. The unit is outboard of the boat hull in its entirety and is mounted a trifle above the chine and substantially forward of the transom. A step device of the unit has spaced rigid legs slidable in the tubular sockets recessed and sealed in the hull, extending in the inboard and upward direction. The step device is spring-biased upwardly in its leg sockets, and has a bottom cross-tread, step or stirrup piece which is mounted from outboard by a water skier, swimmer or other user, whose weight draws the step device downwardly against its spring bias.

3,584,705

CONTROL SYSTEM FOR MOBILE WORK PLATFORMS

Carl W. Ruegg, 10639 S. Golden State Boulevard, Selma, Calif.

Filed July 14, 1969, Ser. No. 841,340
Int. Cl. B66f *11/04*
U.S. Cl. 182—13 **3 Claims**



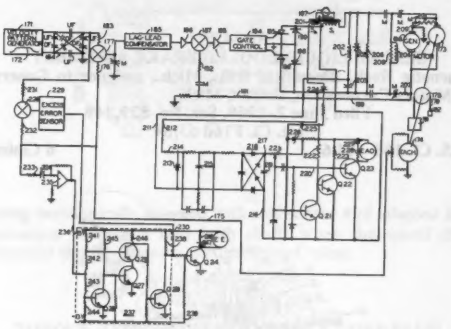
A control system for mobile work platforms adapted elevationally to position a worker relative to workpieces such as trees in an orchard and the like with such a platform being mounted on a mobile chassis for elevational and rotational movement providing a plurality of flexible push-pull control cables extended between control levers on the platform and suitable control valves for the powered members on the chassis with the cables being capable of twisting within their own lengths to accommodate substantially 360° rotation but not continuous rotation of the platform relative to the chassis and a quick-change two-speed drive selector mechanism for the mobile chassis to adapt the mobile platform for operation under a variety of conditions.

3,584,706

SAFTIES FOR ELEVATOR HOIST MOTOR CONTROL HAVING HIGH GAIN NEGATIVE FEEDBACK LOOP

Donivan L. Hall, and Richard C. Loshbough, both of Toledo, Ohio, assignors to Reliance Electric Company, Euclid, Ohio

Division of Ser. No. 373,136, June 4, 1964, Pat. No. 3,435,916 filed Oct. 10, 1968, Ser. No. 758,776
Int. Cl. B66b *5/02*
U.S. Cl. 187—29 **23 Claims**



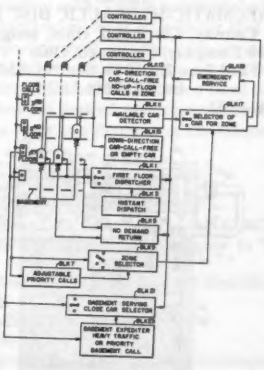
A variable voltage hoist motor control wherein a pattern signal is compared with a feedback signal in a high gain closed loop and the signals at critical points in the control are monitored to ascertain unsafe operating conditions. Indicated unsafe conditions alter the control to either a safe operating mode or shut down the system. Monitored signals include the error signal at the summing point for the pattern and feedback signals, rate of change of the feedback signal, signal level at the high power levels for the motor control during the period the elevator car is to be stationary and to be driven at leveling speeds.

3,584,707

AVAILABLE-CAR ELEVATOR SYSTEM

John Suozzo, and Henry C. Savino, both of Hackensack, N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

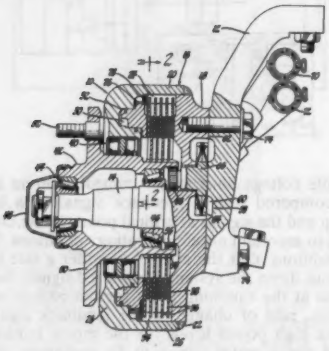
Division of Ser. No. 220,522, Aug. 30, 1962, Pat. No. 3,509,969 which is a continuation-in-part of application Ser. No. 94,723, Mar. 10, 1961, now Patent No. 3,256,958, and a continuation-in-part of 110,464, May 16, 1961, now Patent No. 3,292,736. Filed June 12, 1969, Ser. No. 832,577
Int. Cl. B66b *1/22*
U.S. Cl. 187—29R **14 Claims**



The floors of a structure having multiple elevator cars are divided into a plurality of zones. When a demand for service is registered from a floor, an available car is assigned to the zone of the demand for the purpose of answering the de-

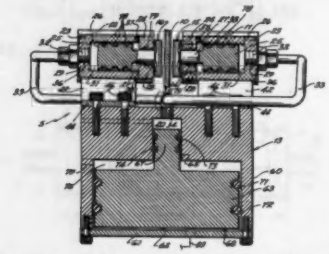
mand. A car making its last stop in the up direction may become available even though an up floor call is registered in a higher zone. For a down-traveling car a detector responsive to presence of a passenger may prevent selection of the car as available. Registration of a floor call for a predetermined variable time makes it a priority call. A car is selected for basement service in a predetermined order of preference. Under certain conditions, if no car is at or assigned to a certain floor a car may be assigned to such floor. Under emergency conditions each available car may be assigned successively to certain calls.

3,584,708
SEALED LIQUID COOLED BRAKE ASSEMBLY
Burnette Heck, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed June 2, 1969, Ser. No. 829,349
Int. Cl. F16d *65/84*
U.S. Cl. 188—71.6 **6 Claims**



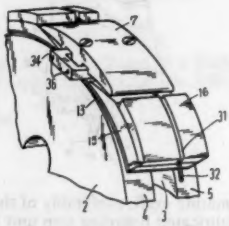
A disc brake assembly is mounted on a support member which may be the steering knuckle when utilized as a vehicle front brake, and has a housing formed of a backing plate and a cover welded together with the brake friction discs and apply piston in position in the housing. The brake assembly also receives a wheel hub which drives the rotatable discs as well as a cooling fluid pump positioned adjacent the backing plate and the support member. Thus, the pump is located at or adjacent the split line when the back assembly is removed from the support member. The spindle on which the hub is rotatably mounted is formed as an integral part of the backing plate. The complete unit is installed on the support member with no adjustments or assembly of brake parts being required.

3,584,709
PNEUMATIC-HYDRAULIC DISC BRAKE
William A. Conway, Cincinnati, Ohio, assignor to The Conway Clutch Company, Cincinnati, Ohio
Filed June 23, 1969, Ser. No. 835,332
Int. Cl. B60t *13/26*
U.S. Cl. 188—152 **3 Claims**



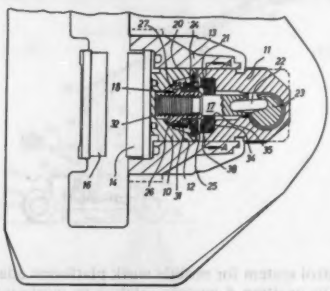
A combination pneumatic-hydraulic brake for stopping or retarding rotation of a brake disc secured to a movable element of a machine. The brake assembly consists of a pneumatic booster cylinder operable upon application of low air pressure to supply high-pressure hydraulic fluid to a pair of opposed hydraulic motors. Actuation of the hydraulic motors moves a pair of opposed brakeshoes into engagement with the brake disc.

3,584,710
ELECTROMAGNETICALLY RELEASABLE DRUM BRAKE WITH INTERNAL SHOES
Gunter Frohlich, Amselweg 27, Ennepetal-Voerde, Germany
Filed Feb. 20, 1969, Ser. No. 801,036
Claims priority, application Germany, Mar. 1, 1968, P 16 75 145.4
Int. Cl. B60t *13/04*
U.S. Cl. 188—171 **11 Claims**



An electromagnetically releasable drum brake with long life internal shoes in which the effects of premature wear of individual brake linings are eliminated. The brake has an annular magnetic body on which are mounted leaf springs extending in the direction of the periphery of the magnetic body. These springs carry on their ends armatures cooperating with the magnetic bodies as well as a brakeshoe. The armatures are centrally mounted and act as stroke limiting means for the brakeshoes. They form a single element together with the fixing means for the leaf springs and are secured at the fixing point of the leaf springs.

3,584,711
ADJUSTABLE DISC BRAKE PUSH ROD
Hugh G. Margetts, Leamington Spa, England, assignor to Girling Limited, Tyseley, Birmingham, England
Filed Sept. 12, 1968, Ser. No. 759,359
Int. Cl. F16d *65/46, 55/18*
U.S. Cl. 188—196 **8 Claims**



A hydraulic actuator for a vehicle brake system is provided with an automatic adjuster and with an auxiliary mechanical actuator which acts through a push rod forming part of the adjuster. The automatic adjuster operates between a hydraulic piston and either a second reaction piston opposed thereto or a cylinder body. The mechanical actuator comprises a cam journaled in said reaction piston or said cylinder body. The reaction piston or cylinder body acts as a guide member for the push rod and is hydraulically sealed thereto.

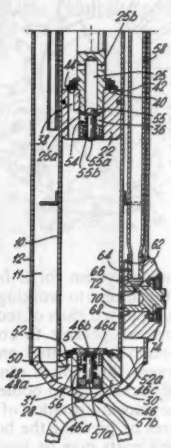
The push rod must be prevented from turning to permit the automatic adjuster to operate and for this purpose the push rod is made noncircular, e.g., oval, in cross section, as is the complementary opening in the guide member.

3,584,712

TELESCOPIC HYDRAULIC SHOCK ABSORBERS

Ronald S. Dickinson, Osbaldwick, York, England, assignor to Armstrong Patents Co. Limited, London, England

Filed May 13, 1969, Ser. No. 824,196
Claims priority, application Great Britain, May 25, 1968, 25098/68
Int. Cl. F16f 9/44
U.S. Cl. 188—282 7 Claims



The invention is an improvement in vehicle telescopic shock absorbers of the type in which a piston carried on a piston rod extending from one end of a pressure tube is slidably displaceable within said pressure tube and the latter is arranged coaxially within an outer reservoir tube with which it cooperates to define an annular space constituting a reservoir for hydraulic fluid, and in which simple closure valves arranged in the piston and between the tube ends remote from the piston rod, control the flow of hydraulic fluid between the pressure tube and the reservoir.

The invention provides that these closure valves are arranged respectively to prevent fluid flow through the pistons during extension strokes of the shock absorber and to prevent fluid flow from the pressure tube space in front of the piston to the reservoir during the compression strokes; that the flow of fluid from the pressure tube space behind the piston to the reservoir is confined to a single path which has a single hydraulic damping valve interposed therein to restrict the flow of fluid therethrough; and that the ratio of the cross-sectional areas of the piston and piston rod being selected to produce a predetermined differential between volumes of fluid within the pressure tube displaced by identical piston movements in the two opposed directions and thereby to establish a predetermined differential between the hydraulic damping rates in the two directions.

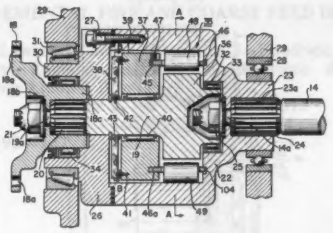
3,584,713

AUTOMATIC FOUR-WHEEL DRIVE MECHANISM

Tatsuo Tani; Yutaka Momose, and Junichiro Oya, all of Kariya-shi, Japan, assignors to Aisin Seiki Company Limited, Aichi-ken, Japan

Filed June 2, 1969, Ser. No. 829,626
Claims priority, application Japan, June 15, 1968, 43/41266
Int. Cl. F16d 15/00, 43/04; B60k 17/34
U.S. Cl. 192—38 6 Claims

An automatic automotive four-wheel drive mechanism, which is provided with a flywheel mass-type sensor operatively connected with the drive and driven wheels for sensing occasional speed differential therebetween, a two-way clutch



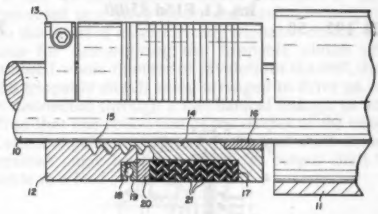
being mechanically coupled with said sensor and adapted for actuation to couple said both shafts when the speed differential should exceed a predetermined value.

3,584,714

TORQUE-RESPONSIVE EXPANDIBLE CORE PLUG

Edward L. Ryswick, Rochester, N.Y., assignor to Tri-County Realty Corp., Rochester, N.Y.

Filed Sept. 8, 1969, Ser. No. 855,913
Int. Cl. F16d 43/21
U.S. Cl. 192—54 15 Claims



The inventive core plug for supporting hollow winding cores uses axial squeezing of elastomeric material to force it radially outward against the inside surface of the core, and makes the axial squeezing variable as a function of the torque applied to the winding core. This is accomplished by arranging rings of elastomeric material on a sleeve that is rotatable relative to a supporting shaft with the rings disposed between a fixed and an axially movable flange. A cam, inclined surface, or screw thread connection between fixed and movable parts accomplishes the desired axial movement of the flange for squeezing the rings as a function of the torque applied to the core.

3,584,715

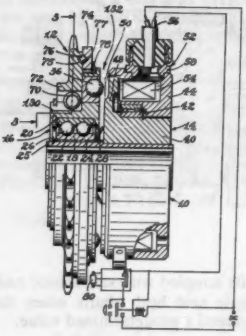
ELECTROMAGNETIC OVERLOAD CLUTCH

Donald L. Miller, Horseheads, N.Y., assignor to The Bendix Corporation

Division of Ser. No. 746,523, July 22, 1968 filed May 18, 1970, Ser. No. 38,228
Int. Cl. F16d 43/20, 27/10
U.S. Cl. 192—56R 5 Claims

An electromagnetic clutch having an overtorque triggered release which allows reengagement of the torque transmitting members without reducing clutch speed. When overload occurs, the initial slippage of the torque transmitting members cams them apart, reversing the spring-electromagnetic force balance to force the axially movable torque-transmitting

member away from the axially stationary torque-transmitting member. Electrical switching means, sensitive to torque and



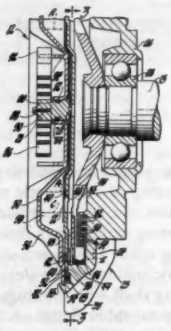
speed, are provided to change the state of current flow in the electromagnetic clutch.

3,584,716

VISCOUS FLUID CLUTCH

Donald J. Coty, Kettering, Ohio, assignor to General Motors, Detroit, Mich.

Filed July 30, 1969, Ser. No. 846,147
Int. Cl. F16d *35/00*
U.S. Cl. 192—58 **7 Claims**



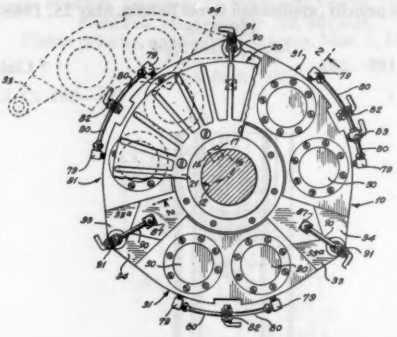
A viscous fluid clutch including relatively rotatable first and second drive members having a fluid shear space therebetween and which are cooperable with a fluid medium in the shear space to provide a shear-type fluid drive therebetween, an annular reservoir for at times storing the fluid medium, a temperature-responsive valve for controlling the flow of the fluid medium from the annular reservoir through an inlet port to the fluid shear space, continually open outlet ports and cooperating pump elements or wipers for forcing the fluid medium from the fluid shear space to the reservoir, and closed-ended radial slots formed on one of the drive members radially outwardly of openings formed therethrough for causing the fluid medium flowing from the annular reservoir to fill the shear space and drive the driven member at its maximum speed at a predetermined temperature, despite variations in the viscosity of the fluid medium.

3,584,717

MOUNTING FOR BRAKE OR CLUTCH

Donald F. Suppes, Wyckoff, and Edwin J. Montalvo, Hackensack, both of, N.J., assignors to Montalvo and Company, Inc., Hackensack, N.J.

Filed July 31, 1969, Ser. No. 846,392
Int. Cl. F16d *13/40, 55/24*
U.S. Cl. 192—70 **8 Claims**



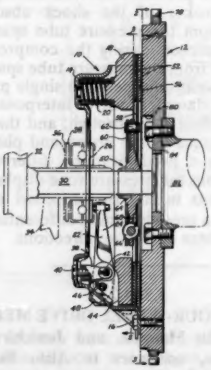
An improved mounting system for a frictional brake or clutch system facilitates access to working parts for inspection and maintenance. Opposed pairs of sector-shaped bodies carrying friction members operable to contact a relatively rotatable disc are commonly mounted on removable pivot pins. In one embodiment three pivot pins serve to secure three pairs of opposed sector-shaped bodies. The removal of a pivot pin permits the outward rotation of any of the sector-shaped bodies it secures by pivoting the body about another pin so that the working parts may be inspected or repaired without the dismantling of the whole mechanism.

3,584,718

WEAR SURFACES OF CLUTCHES, FLYWHEELS AND THE LIKE

Paul J Schiefer, Sherman Oaks, and James D. McFarland, Jr., Chatsworth, both of, Calif., assignors to Schiefer Manufacturing Company, Monterey Park, Calif.

Filed June 2, 1969, Ser. No. 829,602
Int. Cl. F16d *13/46, 13/60*
U.S. Cl. 192—70.14 **15 Claims**



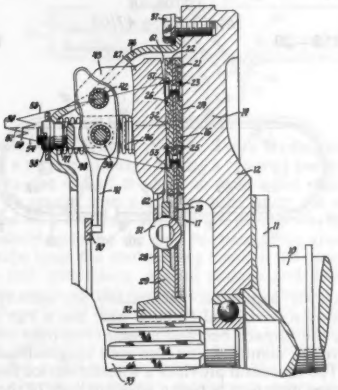
The pressure plate and flywheel of a clutch and flywheel assembly each has a wear surface defined by a coating which acts as a heat barrier to prevent excessive temperature increases in the substrate of the coatings. The coatings are of Al_2O_3 applied by flame plating. The coatings are characterized by their hardness of from about 700 to about 950

VPN_{300}, a porosity of about 2 to about 3 percent, a bond strength to each of the substrates of about 6,000 to about 9,000 p.s.i., a density of about 3.40 gm/cc., a modulus of rupture of about 20,000 p.s.i., a coefficient of thermal expansion of about 3.9 in./in./°F. $\times 10^{16}$, a thermal conductivity of from about 20 to about 40 BTU/(hr.) (ft.^{2}) (°F./in.), and an operational temperature range of from about ambient to about 1,800° F.

3,584,719
CLUTCH WITH PRESSURE PLATE HAVING CONVEX FRICTION FACE

Bobby G. Upchurch, Ortonville, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 24, 1969, Ser. No. 879,493
Int. Cl. F16d *13/70*
U.S. Cl. 192—70.14 **14 Claims**

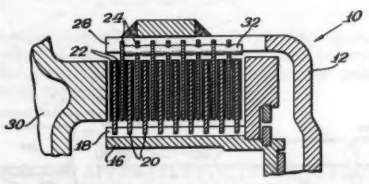


A friction clutch having a rigid one-piece annular clutch pressure plate with a friction face having a large radius of curvature from the annular centerline of the annular friction face to its outer diameter and a larger radius from the annular centerline to the inner diameter to provide a curved friction surface to maintain a more constant area of contact at a more constant radius to improve clutch strength at high temperatures and to improve durability of the friction material by improving wear distribution.

3,584,720
CLUTCH DISCS WITH RUBBERS SEPARATORS

Nils-Eric G. Bark, Lake Bluff, and Karl Kordas, Mundelein, both of, Ill., assignors to International Harvester Company, Chicago, Ill.

Filed June 27, 1969, Ser. No. 837,146
Int. Cl. F16d *13/64*
U.S. Cl. 192—70.28 **3 Claims**

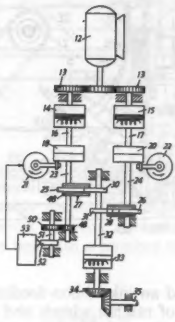


A multiple disc clutch pack for transmitting and interrupting power flow between a drive member and a driven member. Alternating discs axially shiftable, but nonrotatably secured to one of the members, have elastomeric elements extending into engagement with adjacent discs on the said member to separate the discs when the power flow therethrough is interrupted, and are compressible to permit frictional engagement of all the discs when the power is being transmitted.

3,584,721
INCREMENTAL FINE AND COARSE FEED DRIVE SYSTEM

Edward Lawrence, and Christopher J. Goodrick, both of Bromley, England, assignors to Electronic Autosizing Metrology Limited, Bromley, England

Filed June 2, 1969, Ser. No. 829,373
Int. Cl. F16d *71/04;* **B23b** *39/14*
U.S. Cl. 192—142 **7 Claims**

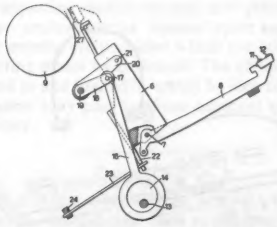


This invention relates to an incremental drive system comprising a first electromagnetic clutch arranged to have its input connected to a drive motor and having its output connected to the input of an electrically trippable clutch, electrical means for deenergizing the trippable clutch after a predetermined whole number of revolutions thereof, the output of the trippable clutch being arranged to drive an eccentric cam connected through a mechanical linkage to an output shaft so that one revolution of the output of the trippable clutch causes angular rotation of the output shaft through a predetermined angle less than 360°, the output shaft being connectable to a lead screw.

3,584,722
CARBON RIBBON VIBRATING DEVICE FOR A TYPE BAR TYPEWRITER

Walter Albrile, Torino, Italy, assignor to Inq. C. Olivetti & C., S.p.A., Ivrea, Torino, Italy

Filed Oct. 1, 1968, Ser. No. 764,174
Claims priority, application Italy, Oct. 14, 1967, 53349-A/67
Int. Cl. B41j *33/58, 35/10*
U.S. Cl. 197—158 **7 Claims**



A cyclic means executes a cyclic operation incidental to each operation of a typing mechanism and early in each such cyclic operation causes a ribbon vibrator first to be subjected to a resilient operating urge and then to be restored. Moreover, late in said operations of said cyclic means there is alternately set up one or another stopping condition for said vibrator, whereby said vibrator is operated resiliently to

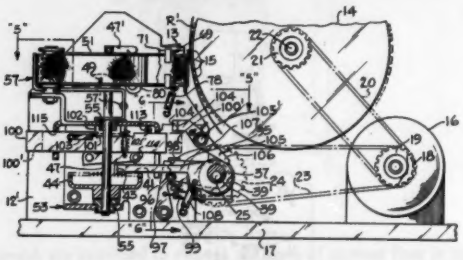
different extents at alternate typing operations. In connection with typing operations effected while the machine is in an upper case state, there becomes set up a substitute stopping condition for one of said two stopping conditions.

3,584,723

INK-RIBBON FEEDING AND REVERSING ASSEMBLY

Hilding A. Anderson, Lake Zurich, Ill., assignor to SCM Corporation, New York, N.Y.

Filed Sept. 25, 1968, Ser. No. 762,454
Int. Cl. B41j *33/44*
U.S. Cl. 197—165 **19 Claims**



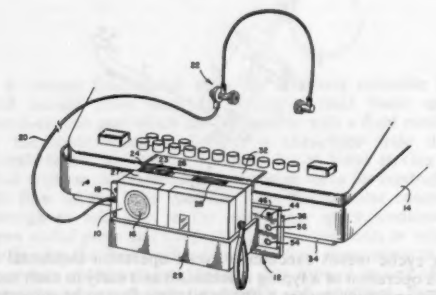
There is disclosed an ink-ribbon feeding and reversing assembly with a pair of ratchet wheels and a respective pair of drive pawls. The rachet wheels drive respective ribbon carriers. The ribbon is driven in one direction when one of the pawls is in driving engagement with one rachet wheel, the other pawl being held out of driving engagement with the other ratchet wheel. An electric motor continuously drives a drive shaft through a clutch. The drive shaft carries a pair of eccentrics which are directly connected to the pair of pawls. An eyelet at each end of the ribbon actuates an associated sensing lever. When either one of the sensing levers is actuated it operates a respective interposer. Each pawl drives an actuator. When either interposer is moved into the path of its respective actuator, a reversing control device is operated to switch the direction of ribbon feed. The reversing control device includes a tubular control shaft received by the drive shaft. Control members, interconnected by the control shaft, enable engagement of one drive pawl and one detent pawl with one ratchet wheel and hold the other drive pawl and another detent pawl out of engagement with the other ratchet wheel.

3,584,724

DICTATION TRANSCRIBER SYSTEM

Wallace R. Waynick, 3710 East Joppa Road, Baltimore, Md.

Filed July 23, 1968, Ser. No. 746,860
Int. Cl. B41j *29/00*
U.S. Cl. 197—180 **5 Claims**



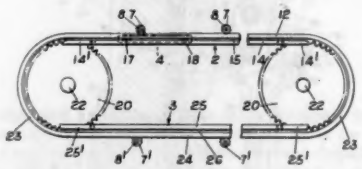
A bracket is provided for stably mounting a small, portable transcriber with its controls positioned at substantially the same level as, and slightly in front of, the spacer bar of a typewriter. The bracket includes a receptacle providing a well, or compartment, dimensioned to receive the transcriber snugly therein. The receptacle may include an auxiliary well for receiving an alternating current adapter for the transcriber. The bracket includes a flat, horizontal mounting plate upon which the typewriter is positioned so that the weight of the typewriter will inhibit relative movement of the bracket. The receptacle may be vertically adjustable so that the bracket may be adapted for use with different models of typewriters having spacer bars at different vertical positions.

3,584,725

CONVEYOR APPARATUS

Peter Henry Richards, Kenilworth, and Colin Michael Bennett, Alvechurch, Birmingham, both of, England, assignors to Pilkington Brothers Limited, Liverpool, England

Filed Apr. 21, 1969, Ser. No. 817,687
Claims priority, application Great Britain, Apr. 25, 1968, 19708/68
Int. Cl. B65g *47/00*
U.S. Cl. 198—20 **11 Claims**



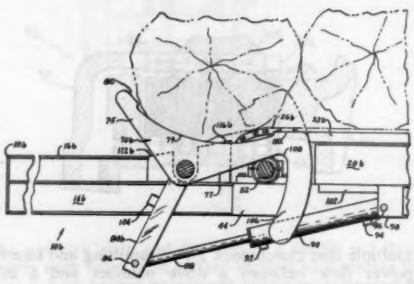
A conveyor apparatus, particularly for conveying glass sheets along a horizontal furnace bed, has a run extending alongside the furnace bed and a return run over which elongated carriage members are conveyed longitudinally in succession. The invention provides a transfer device for transferring carriage members between adjacent ends of the two conveyor runs. The transfer device includes at least one driven sprocket wheel and each carriage member has adjacent opposite ends thereof respective guide elements (rollers) locatable between teeth on the sprocket wheel to be engaged thereby. Smooth transfer of the carriage members between the two conveyor runs is effected upon rotation of the sprocket wheel. An arcuate guide member, concentric with the axis of rotation of the sprocket wheel, is arranged to engage the guide elements of a carriage member to prevent disengagement of said elements from the sprocket teeth during transfer of the carriage member over the sprocket wheel.

3,584,726

LOG TRANSFER MECHANISM

Goerge W. Hartzell, Piqua, Ohio, assignor to Hartzell Industries, Inc., Piqua, Ohio

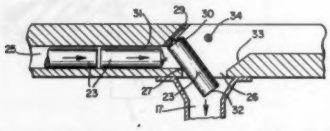
Filed Aug. 12, 1968, Ser. No. 751,895
Int. Cl. B65g *47/34*
U.S. Cl. 198—26 **4 Claims**



A mechanism to stop and then selectively discharge logs serially advanced thereto comprises crescent shaped transfer

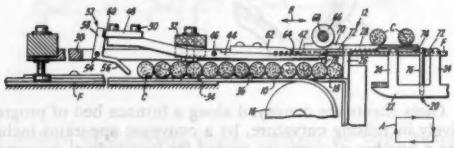
elements mounted in laterally spaced relation and cooperating to form a cradle for receiving the logs. The presence of a first log in the cradle blocks the movement of additional logs to the cradle. Mechanism to rotate the transfer elements in unison turns the cradle to discharge a log therefrom and bumper members fixed to the transfer elements block the advance of additional logs to the cradle as the first received log is discharged from the cradle.

3,584,727
STUD ORIENTATION AND FEEDING MECHANISM
Adolf Froehlking, Willingboro, N.J., assignor to Omark Industries, Incorporated, Portland, Oreg.
Filed May 16, 1968, Ser. No. 729,677
Int. Cl. B65g *47/24*
U.S. Cl. 198—33 **6 Claims**



Apparatus for orienting studs in a stud feeding mechanism including a transfer passage having a relieved portion complimentary to one end of the stud to permit the stud to rotate and fall by gravity into a loading tube upon the stud being transferred by a first end through the passageway and means for oppositely inclining the stud for passage by gravity to the loading tube upon the stud passing through the passageway in opposite end orientation. A stud storage and delivery tube cut on an angle to the longitudinal axis thereof to permit lateral dissembly of the tube when filled with studs. Escapement mechanism for receiving studs by gravity including a camming surface to prevent the next adjacent stud from jamming the mechanism on transfer of the stud to the feed port and wherein the transfer mechanism, when in the loading position, leaves the feed port unobstructed for the return and discharge in the reverse direction of any stud not properly dispatched.

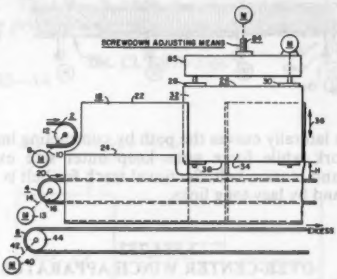
3,584,728
CIGAR CONVEYOR
Frank Hollenton, Richmond, Va., assignor to AMF Incorporated
Filed Feb. 4, 1969, Ser. No. 796,514
Int. Cl. B65g *47/26*
U.S. Cl. 198—34 **4 Claims**



Apparatus comprising a conveyor for moving cigars, means for transferring the leading cigar from said conveyor and means for arresting the movement of all but the transferred cigar during the process of transference.

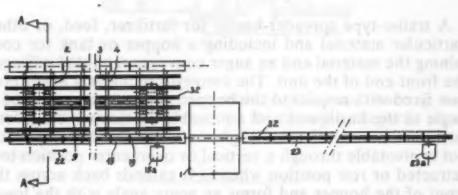
3,584,729
METHOD AND APPARATUS FOR DIVIDING FLOW OF HETEROGENEOUS MATERIALS
Joe G. Ivy, Hinsdale, Ill., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 2, 1969, Ser. No. 821,374
Int. Cl. B65g *15/14, 15/28;* **B67d** *5/08*
U.S. Cl. 198—165 **6 Claims**

Heterogeneous materials are divided into separate flows of predetermined volumetric flow rate by means of systems comprising conveyor belts that are adjustably located. One disclosed system involves using an adjustably located conveyor belt with a substantially vertical working face set diagonally across the path of a horizontally extending conveyor belt and spaced therefrom, to deflect to an adjacent



and parallel horizontally extending conveyor belt the heterogeneous material not passing thereunder. A second system uses adjustably located conveyor belts to divide a band of heterogeneous material advancing on a horizontally extending conveyor belt into a number of substantially equal portions.

3,584,730
INSTALLATION FOR THE TRANSFERRING OF LONG OBJECTS TO BE USED PARTICULARLY FOR THE SERVICE OF MACHINES FOR BINDING BARS
Hubert Elineau, Versailles, France, assignor to Etablissements R. Senard & Fils, Maromme, Seine-Maritime, France
Filed Dec. 23, 1968, Ser. No. 786,210
Claims priority, application France, Dec. 22, 1967, 7 204
Int. Cl. B65g *37/00*
U.S. Cl. 198—106 **2 Claims**

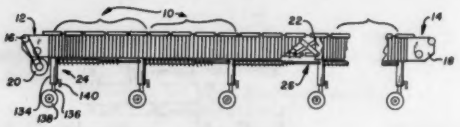


A chair conveyor, specially for transferring elongated objects and/or serving machines for binding bundles of bars or sections. The conveyor has two parallel endless chains, means for imparting motion thereto and plates to interconnect the two endless chains. Spaced apart supports for the transported objects are provided which are connected to the interconnecting plates by pedestals. The chain conveyor can be associated to and loaded by a step by step conveyor whose movable beams may pass between adjacent supports in the chain conveyor.

3,584,731
FLEXIBLE CONVEYOR APPARATUS
Billy J. Dahlem, Golden, and John A. Martin, Denver, both of, Colo., assignors to Power-Curve Conveyor Company, Denver, Colo.
Filed Dec. 6, 1968, Ser. No. 781,718
Int. Cl. B65g *15/50, 41/00*
U.S. Cl. 198—109 **16 Claims**

Apparatus includes conveyor belt which is flexible laterally in its own plane for curved paths and carrier framework which is equally flexible for adjustment to any desired plan. Framework has plurality of longitudinally spaced main

frames connected by lazy tong linkages at sides to expand and contract longitudinally. Spring force units between successive frames expand apparatus to tension belt. Swinging



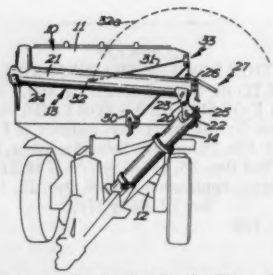
portions laterally curves the path by contracting inner side of framework while force units keep outer side extended to stretch and tension belt. Sectional track for belt is carried by frames and by lazy tong links.

3,584,732

OVER-CENTER WINCH APPARATUS

Loren E. Tyler, Wayzata, and James L. Richardson, Excelsior, both of, Minn., assignors to Letco, Inc., Long Lake, Minn.

Filed Feb. 6, 1969, Ser. No. 796,979
Int. Cl. B65g *21/12, 33/14*
U.S. Cl. 198—115 **14 Claims**



A trailer-type spreader-hauler for fertilizer, feed, or other particular material and including a hopper or tank for containing the material and an auger conveyor mounted adjacent the front end of the unit. The conveyor includes a lower portion fixed with respect to the hopper and inclined at an acute angle to the horizontal and a movable portion which, in one position is in continuous alignment with the lower portion but is pivotable through a vertical or overcenter position to a retracted or rest position wherein it extends back across the front of the hopper and forms an acute angle with the lower portion. A cable has one end connected to the movable portion of the auger and the other end connected to a winch whereby it may be retracted or extended. Intermediate these two ends, the cable extends over a pulley apparatus which is disposed above and in vertical alignment with the pivot. The cable and pulley apparatus cooperate so that retraction of the cable when the movable portion of the conveyor is disposed on either side of the overcenter position will move it towards this position where it will move overcenter due to its momentum, with the cable remaining in cooperating engagement with the pulley apparatus, and then moves away from the center position due to gravity as the cable is extended.

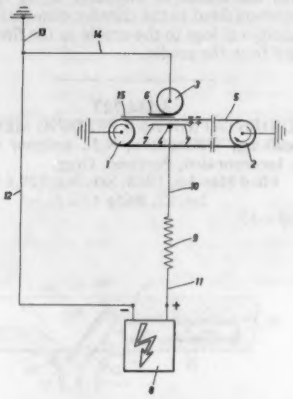
3,584,733

TRANSPORT SYSTEM FOR SINGLE SHEETS OF PHOTOSENSITIVE MATERIAL

Heinrich Isermann, Siegen, Westphalia, Germany, assignor to Meteor-Siegen Apparatebau, Paul Schmeck G.m.b.H., Siegen, Westphalia, Germany

Filed Sept. 16, 1968, Ser. No. 759,948
Claims priority, application Germany, Sept. 15, 1967, P 15 97 708.9
Int. Cl. B65g *15/00*
U.S. Cl. 198—129 **2 Claims**

A conveyor belt transporting apparatus for photosensitive sheet material, which belt attracts the sheets electrostatically, the electrostatic charge being applied to the belt from a DC voltage source by an electrode which extends transversely of the belt, a load resistor being connected between the elec-



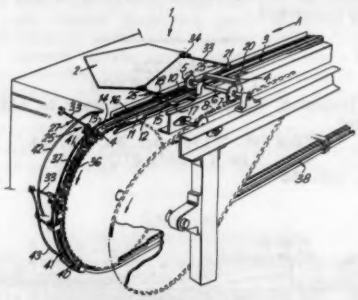
trode and the DC voltage source for automatically adjusting the potential at the electrode to the value required by air humidity.

3,584,734

CONVEYOR APPARATUS

Peter Henry Richards, Kenilworth, and Colin Michael Bennett, Alvechurch, Birmingham, both of, England, assignors to Pilkington Brothers Limited, Liverpool, England

Filed May 6, 1969, Ser. No. 822,125
Claims priority, application Great Britain, May 8, 1968, 21,836/68
Int. Cl. B65g *17/16;* **C03b** *21/02*
U.S. Cl. 198—180 **10 Claims**



Glass sheets are conveyed along a furnace bed of progressively increasing curvature, by a conveyor apparatus including a number of carriages guided for longitudinal movement along one side of the bed, each carriage having a pivotally attached drive-transmitting element for engaging an adjacent edge of a glass sheet on the bed, and the drive-transmitting elements are controlled to follow the changing position of the sheet edge engaged by said element, as the sheet bends.

3,584,735

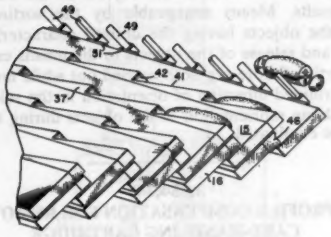
SHUFFLE FEED POSITIONER

Ralph K. Daugherty, San Jose, Calif., assignor to Genevieve I. Hanscom and Genevieve I. Hanscom, Robert Magnuson, Lois J. Thompson, Trustees of the Estate of Roy M. Magnuson, part interest to each

Filed June 13, 1968, Ser. No. 736,861
Int. Cl. B65g *25/04*
U.S. Cl. 198—218 **8 Claims**

A shuffle feed structure for feeding articles which require trimming of the ends, in which the article advancing faces of

the shuffle members include a series of wedge-shaped surfaces for feeding and orienting the articles (such as pickles) so that each article rests against one of the inclined faces of the shuffle feed member and abuts the end face of one of the



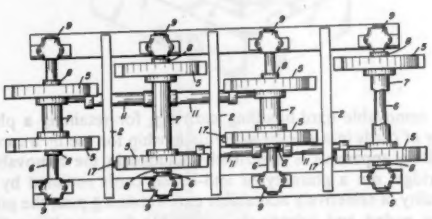
wedges. During the last step of movement of the shuffle feed the articles are carried through a pair of trimming knives which cut off the ends of the pickle so that the middle segment of each pickle is cut to a uniform length.

3,584,736

CONVEYOR AND METHOD OF CONVEYING OBJECTS HAVING CYLINDRICAL SURFACES

Howard R. De Mallie, Rochester; Eugene Lemieux, Albion, and Grant J. Kothiringer, Webster, all of, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 20, 1969, Ser. No. 808,770
Int. Cl. B65g *25/04*
U.S. Cl. 198—219 **5 Claims**



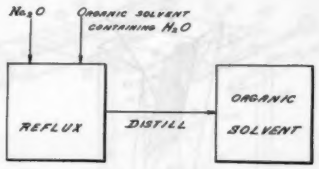
A method of conveying and a conveyor for large heavy rolls of photographically sensitized webs (e.g. paper, film). The conveyor includes four pivotally mounted saddle assemblies which include saddle members which interleave according to a sequence controlled by a hydraulic and electronic control system. The saddle assemblies support and move rolls of product along a path defined by a series of intersecting arcs. The rolls are transferred from one saddle assembly to the next at the points of intersection. The method includes the steps of: (*a*) supporting the cylindrical surface of the roll on a first pivotal support, (*b*) pivoting said support to move said object along a path defined by an arc, (*c*) maintaining said surface substantially stationary relative to said support during the pivoting step (*b*), (*d*) lifting said object from said first pivotal support with a second pivotal support, and repeating steps similar to steps (*b*) and and c). Peripheral damage to the rolls, which might occur if they were conveyed by rolling for substantial distances, is substantially eliminated by the described conveyor and method.

3,584,737

PROCESS FOR DRYING ORGANIC SOLVENTS BY SODIUM MONOXIDE TREATMENT AND DISTILLATION

Gunter Giesselmann, Neu-Isenburg, and Wilfried Rothe, Strotzbach Lower Franconia, both of, Germany, assignors to Deutsche Gold-Und Silbia-Scheideanstalt Formals Roessler, Frankfurt, Germany

Filed May 7, 1968, Ser. No. 727,370
Claims priority, application Germany, June 19, 1967, D53371
Int. Cl. C07b *5/00*
U.S. Cl. 203—14 **6 Claims**



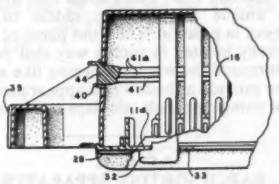
Water containing organic solvents are dried by contact with sodium monoxide (Na_2O).

3,584,738

CONTAINER STORAGE DEVICE

Robert S. Wallace, 2706 S. Robertson Blvd., Los Angeles, Calif.

Filed Apr. 14, 1969, Ser. No. 815,938
Int. Cl. B65d *21/02, 85/62*
U.S. Cl. 206—1 **15 Claims**



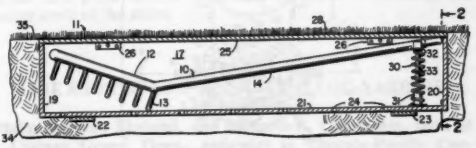
The disclosure concerns a molded pallet and housing assembly for storing containers, as for example magnetic tape cartridges, enabling pallet stacking and transportation of the containers.

3,584,739

CONCEALED GOLF COURSE AND SAND TRAP RAKE AND CONTAINER THEREFOR

Edward C. Erichson, 5875 Romany Road, Oakland, Calif., and John F. Finnegan, Box 1145, Tahoe City, Calif.

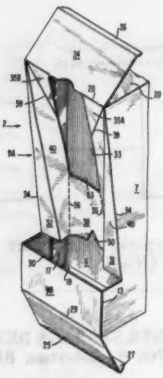
Filed Dec. 11, 1969, Ser. No. 884,155
Int. Cl. B65d *85/54*
U.S. Cl. 206—16 R **2 Claims**



A rake for use in a golf course sand trap in which the rake has a head portion on the same plane as the handle which extends at an angle therefrom, the rake being stored, when not in use, in a container of minimum dimensions to hold the rake. The container is buried in the ground adjacent a sand trap, and is provided with a hinged cover having an artificial turf surface flush with the ground. Downward pressure on the

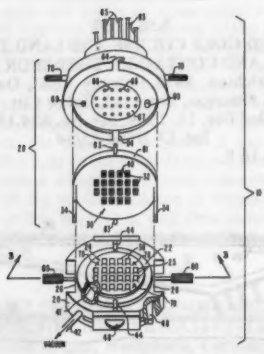
cover unlatches the cover and an internal spring opens the cover and raises the rake handle from the container.

3,584,740
DISPLAY CARTON
Wallace E. Hanson, Springfield, Mass., assignor to U.S. Plywood-Champion Papers Inc., Hamilton, Ohio
Filed June 9, 1969, Ser. No. 831,515
Int. Cl. B65d *5/50*
U.S. Cl. 206—45.14 **4 Claims**



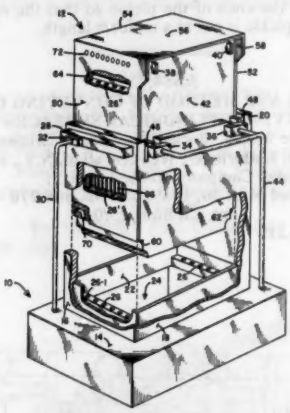
A shadow box which may be made from one piece of sheet material, preferably paperboard, uses triangular panels to connect and fold the front panel down into the carton while providing a unique tie panel or saddle to support the packaged object in position. The front panel of the box has a window centrally located in such a way that portions of the front panel surround the window opening like a frame and at the same time provide a shadow box appearance while avoiding the use of swinging panels and flaps to accomplish same.

3,584,741
BATCH SORTING APPARATUS
Edward F. Schirmer, South Burlington, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed June 30, 1969, Ser. No. 837,595
Int. Cl. B07c *3/12*
U.S. Cl. 209—74 **15 Claims**



An array of objects in a predetermined sequence and direction of orientation, such as semiconductor chips, is tested and batch sorted by a sorting fixture having a matrix of locations with individually actuable vacuum pickups, while maintaining a predetermined direction of orientation of the objects. A system for this purpose includes a tester for measuring a characteristic of the objects in the array while maintaining them in a predetermined sequence and direction of orientation. Means for storing a result based on the measurements for each object in the array is connected to the tester. The sorting fixture for batch separation of objects with the desired characteristic on the basis of the stored results from the remainder of the objects is connected to the means for storing to allow selection of the objects on the basis of the stored results. Means engageable by the sorting fixture receives the objects having the desired characteristic. The selection and release of the objects to the means engageable by the sorting fixture are both carried out while maintaining a predetermined direction of orientation in the selected objects, enabling reorientation of the objects during their handling to be eliminated.

3,584,742
CARD PROFILE COMPENSATION FOR REMOVABLE CARD-HANDLING CARTRIDGE
LeRoy E. Gerlach, Minneapolis, Minn., assignor to Sperry Rand Corporation, New York, N.Y.
Filed May 29, 1969, Ser. No. 828,860
Int. Cl. B07c *3/10*
U.S. Cl. 209—80.5 **10 Claims**

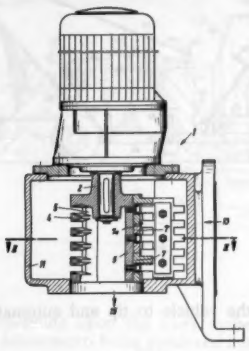


A removable card-handling cartridge for retaining a plurality of cards in a side-by-side relationship for use by a card-handling apparatus is described. Included in the removable cartridge, are a plurality of end-coded cards retained by a plurality of selectively actuatable card-retaining pins, the pins being coded and selectively actuatable for permitting the selection of individual ones of the end-coded retained cards for access to the card-retained cards for access to the card-handling apparatus. High-resistance fluid nozzles are utilized for keeping the cards separated while in the retained position. An end wall fluid system is also shown for providing card profile compensation for ensuring card separation. Additionally, a fluid system is illustrated for assisting in returning cards to the cartridge.

3,584,743
COMMINUTOR FOR SOLIDS CARRIED IN FLOWING LIQUIDS
Herbert Dinges, Gelnhausen, Germany, assignor to Condux-Werk, Herbert A. Merges KG, Wolfgang bei Hanau, Germany
Filed Nov. 18, 1969, Ser. No. 877,631
Claims priority, application Germany, Mar. 21, 1969, P 19 14 413.9
Int. Cl. C02c *1/22*
U.S. Cl. 210—174 **11 Claims**

A comminutor for solid materials carried by a flowing liquid includes a sieve drum formed of axially spaced rings

connected together. A comb unit is mounted adjacent to the drum and has a plurality of teeth which extend into the spaces between the rings so as to remove matter clogging the sieve slots. Axially extending grooves are formed in the periphery of the drum and carry a series of aligned fitted cutter pieces whose outwardly directed faces lie in a common



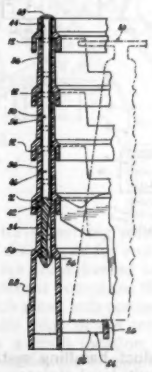
plane which is radially inward of the outermost periphery of the drum. The drum cutter pieces together have an axially extending cutting edge which is exposed in the spaces between the rings. At least one piece of each cutter unit has a tooth which extends radially beyond the drum periphery. The cutter unit teeth and cutting edges coact with the cutting edges of the comb unit during rotation.

3,584,744

RACK CONSTRUCTION FOR CUPS AND GLASSES

Ralph Ettlinger, Jr., 1370 Lincoln Ave., S., Highland Park, Ill.

Filed Oct. 1, 1968, Ser. No. 764,279
Int. Cl. A47l *15/50*
U.S. Cl. 211—71 **6 Claims**



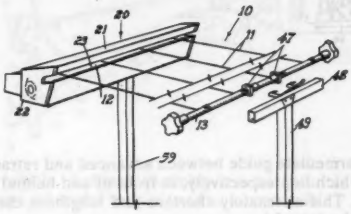
A rack for supporting cups and glasses comprising a flat bed defining an upstanding peripheral wall. A gridwork is supported on the wall, the gridwork including upper portions in a plane spaced apart from the flat bed and defining openings for receiving the cups and glasses. The gridwork is composed of two sets of dividers with the dividers in one set being perpendicular to the dividers of the other set. Each of the dividers comprises a relatively thin panel having a substantial vertical dimension and defining a scalloped upper edge with the low points of the edges being located at intersections of the respective panels and the high point of said edges being located intermediate adjacent intersections. The rack construction preferably includes additional frame members which are interposed between the bed and the frame supporting the dividers whereby variations in the height of the construction can be accomplished.

3,584,745

EXTENSIBLE CLOTHES LINE

Robert William Wrightson, Edwardstown, Australia, assignor to Hills Industries Limited, Edwardstown, Australia

Filed May 6, 1969, Ser. No. 822,205
Claims priority, application Australia, May 8, 1968, 37478
Int. Cl. B65h *75/48;* **D06f** *53/02*
U.S. Cl. 211—119.15 **7 Claims**



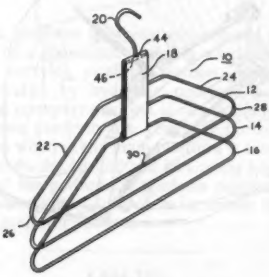
An extensible clothes line of the type having a series of lines secured to a spring loaded rotational drum, wherein the lines are fully extended from the drum and further tension does not rotate the drum against spring pressure when the spreader bar is engaged on its retention means, tensioning of the line being achieved by rotating the spreader bar to thereby wrap the lines around it.

3,584,746

MULTIPLE GARMENT HANGER

Louis G. Marchman, P.O. Box 26, Vandalia, Mich.

Filed Dec. 29, 1969, Ser. No. 888,500
Int. Cl. A47g *29/00*
U.S. Cl. 211—116 **7 Claims**



A multiple garment hanger having a plurality of hanger sections mounted on a member which is adapted to pivot outwardly and upwardly as garments are placed successively on the hanger sections. A hook is connected to the pivoted member for supporting the three sections on a hook or pole. The three sections and hook fold onto a substantially common plane. The hanger sections have laterally extending arms and preferably a horizontal member connecting the outer ends of the arms.

3,584,747

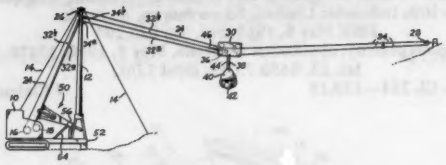
LINE SHORTENER FOR GRAPPLE LOG-YARDING APPARATUS

Philip Norman Ekelund, and Richard E. Cummings, both of Cottage Grove, Oreg., assignors to Georgia-Pacific Corporation, Portland, Oreg.

Continuation-in-part of application Ser. No. 825,849, May 19, 1969, now abandoned. This application July 31, 1969, Ser. No. 846,330
Int. Cl. B66c *19/00*
U.S. Cl. 212—84 **7 Claims**

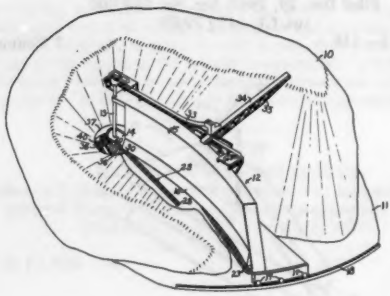
A line shortener for grapple log-yarding apparatus comprises at least three line guides in series engagement with a

deflection segment of a grapple-supporting yarding line. The intermediate guide lines on one side, the two outer guides on the other side, of the line. A reciprocating drive reciprocates



the intermediate guide between advanced and retracted positions which lie, respectively, in front of and behind the outer guides. This alternately shortens and lengthens the line and works the grapple.

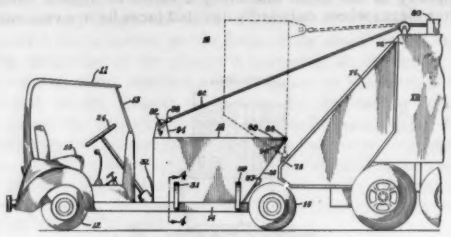
3,584,748
BULK MATERIAL RECLAIMING APPARATUS
Peter W. Enfield, and Donald F. Darden, both of Spokane, Wash., assignors to Atlas Spokane, Inc., Spokane, Wash.
Filed Aug. 14, 1969, Ser. No. 850,086
Int. Cl. B65g *65/28*
U.S. Cl. 214—10 **12 Claims**



A reclaiming apparatus having a rigid elongated framework movable toward an exposed face of a storage pile containing bulk material such as sawdust or wood chips. At the lower portion of the framework are flexible sweeps that engage the base of the storage pile. Each sweep is free at its trailing end and has its leading end pulled about the framework along a concave path that is directed toward the exposed face of the pile. The moving sweeps extend outward from the framework to undercut the base of the pile. The automatically work along the lower edge of the pile to remove material therefrom.

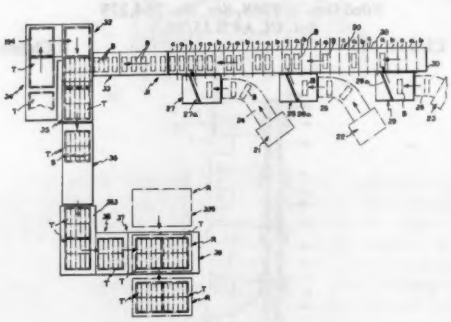
3,584,749
MOTORIZED COLLECTOR
Joseph B. Parello, 777 Edgewood Ave., Rochester, N.Y.
Filed Jan. 9, 1969, Ser. No. 790,132
Int. Cl. B65g *67/02*
U.S. Cl. 214—38R **19 Claims**

A motorized pickup vehicle includes a removable container that is slidably received to set in place on the vehicle. The container is adapted to be pivoted to empty its contents. A power drive on the vehicle, and/or from a collection unit, is attached to the container to pivot the container up from its



position on the vehicle to tip and automatically empty its contents.

3,584,750
FARINACEOUS PRODUCT HANDLING SYSTEM
Hiram E. Temple, Saginaw, Mich., assignor to Baker Perkins Inc., Saginaw, Mich.
Division of Ser. No. 508,684, Nov. 19, 1965, Pat. No. 3,466,835 filed Feb. 15, 1969, Ser. No. 825,470
Int. Cl. B65g *1/06*
U.S. Cl. 214—16.4 **5 Claims**

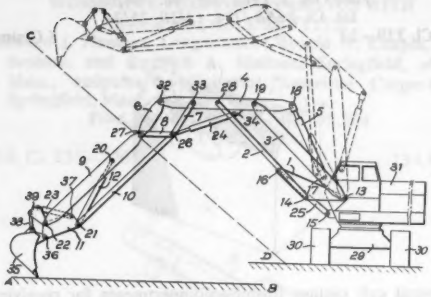


A farinaceous product handling system wherein loaded trays are fed into a multi level elevator. A multilevel mobile rack is aligned with shelves of the loaded elevator, after which a pusher discharges all elevator shelves onto the aligned rack shelves.

3,584,751
MECHANICAL EARTH WORKING MACHINE
Jean-pierre B. Bellart, Senlis, France, assignor to Societe Anonyme Poclain, Oise, France
Filed July 30, 1969, Ser. No. 846,135
Claims priority, application France, Aug. 2, 1968, PV161627
Int. Cl. E02f *3/75*
U.S. Cl. 214—138 **3 Claims**

This invention relates to a mechanical earth working machine, such as a mechanical excavator or loader, so

designed as to permit rectilinear movement of the tool, the height and direction of travel of the tool also being selectively adjustable depending upon the work to be carried out, each of the said adjustments being produced automatically.

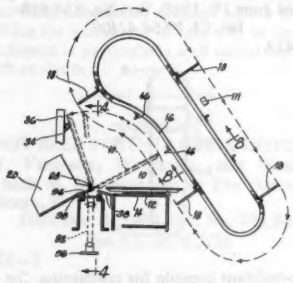


3,584,752

TABLEWARE TRAY TILTING AND CONVEYING MEANS

Ralph Ettlinger, Highland Park, and Walter Schneider, Chicago, both of, Ill., assignors to Avant Industries, Inc., Wheeling, Ill.

Filed Aug. 21, 1969, Ser. No. 851,937
Int. Cl. B65b *69/00*
U.S. Cl. 214—318 **7 Claims**



Tilting means for trays carrying soiled tableware so that the tableware can be discharged for entry into a dishwashing machine while the trays are delivered to a separate washing machine. The tilting means comprises lifting elements on an endless conveyor which move into contact with one side edge of a tray. The opposite edge of the tray engages abutment means which provide a pivot location whereby the tray is tipped and the soiled tableware is removed. A separate conveyor then moves the trays away from the abutment means for delivery to the separate washing machine.

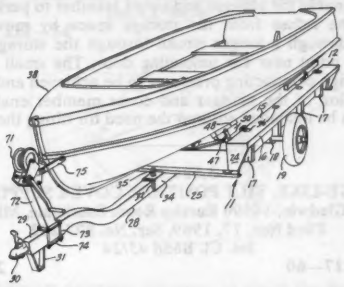
3,584,753

BOAT-CARRYING KIT

Edward A. Voeller, 455 North Moore Road, Port Washington, Wis.

Filed Sept. 26, 1969, Ser. No. 861,241
Int. Cl. B60p *1/04*
U.S. Cl. 214—500 **11 Claims**

A wheeled trailer body having a bed provided with upstanding longitudinal side fenders, whose top walls are apertured to receive either the bottom ends of the side stakes of a rectangular enclosure or depending lugs on the ends of a plurality of boat-supporting transverse brackets, so that the body can be adapted for use either as a cargo trailer or as a boat trailer. The trailer body has a hitch tongue for attachment to a motor vehicle. A winch assembly can be mounted on the hitch tongue when the body is used as a boat trailer.

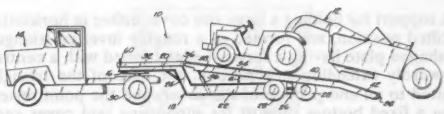


3,584,754

TILTING TRAILER

Jack E. Moll, New Berlin, Wis., assignor to Miller Tilt-Top Trailer, Inc., Milwaukee, Wis.

Filed Aug. 14, 1969, Ser. No. 850,018
Int. Cl. B60p *1/28*
U.S. Cl. 214—505 **5 Claims**



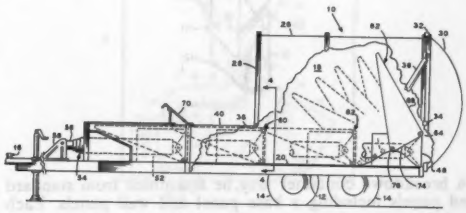
A main load platform is pivotally connected to the lower frame portion of a gooseneck trailer in which the gooseneck forms a load carrying platform portion. The platform is raised and lowered by hydraulic operated ram cylinders between a level transport position in which the gooseneck as well as the main platform are generally horizontal, and a loading position wherein the main platform is tilted so that its trailing edge meets the ground and its leading edge meets the trailing edge of the gooseneck platform portion to thereby permit the load or a part thereof to be driven directly onto the gooseneck platform portion.

3,584,755

REFUSE VEHICLE WITH COMPACTING AND UNLOADING MEANS

Harold E. Smith, Defiance, Ohio, assignor to Thad J. Earl, Defiance, Ohio, a part interest

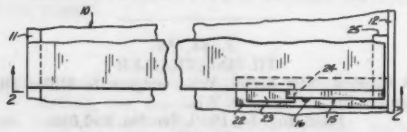
Filed Sept. 2, 1969, Ser. No. 854,523
Int. Cl. B65f *3/00*
U.S. Cl. 214—83.3 **10 Claims**



A refuse vehicle having improved compacting and unloading means is provided. A refuse storage space of the vehicle has a rear unloading door and a front opening through which

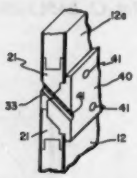
refuse is loaded into the storage space. A small compacting plunger pushes the refuse through the loading opening into the space and compacts it. A rigid cover member is hinged to the plunger and is pivotally raised when the plunger is extended fully into the storage area and the unloading door is open to enable the plunger and cover member to periodically unload the refuse from the storage space by moving the plunger through a longer stroke through the storage space and to a point near the unloading door. The small plunger enables high compacting pressures to be achieved and yet the combination of the plunger and cover member enables the vehicle to be unloaded without the need for tilting the body.

3,584,756
HINGE-LIKE, TILT POSITION, COVER SUPPORT
Floyd R. Gladwin, 14500 Eureka Road, Southgate, Mich.
Filed Nov. 17, 1969, Ser. No. 877,242
Int. Cl. B65d *43/24*
U.S. Cl. 217—60 **2 Claims**



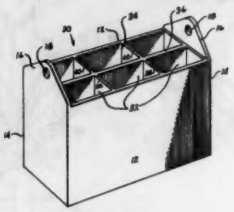
A support for holding a large size cover either in horizontal or tilted position, and formed of a roughly inverted triangular-shaped plate having a forward edge formed with a central rearwardly extending step portion, the base of the triangle secured to an end portion of the cover, and the point rested upon a fixed bottom support for supporting said cover end, with a forward stop normally engaging the forward edge of the plate above the step portion and a rear ledge stop closely spaced near the middle of the plate rear edge, so that the cover may be tilted and the plate rear portion may be fitted beneath and engaged with the rear ledge stop while the step portion engages the forward stop for holding the cover in tilted position.

3,584,757
BREAKDOWN CONTAINER
John Darrell Blaisdell, Torrance, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Filed May 19, 1969, Ser. No. 825,769
Int. Cl. B65d *7/24, 11/18*
U.S. Cl. 220—4R **3 Claims**



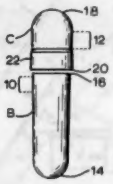
A breakdown container may be assembled from standard sized panels including a base panel and wall panels. Each panel features a beveled portion along each edge thereof. Further, pins and sockets impart interlocking capabilities to the panels. The base panel serves as a pallet for cargo. The container is compatible with proposed NATO requirements as well as commercial and military specifications.

3,584,758
BATTERY TRAY
Robert D. Moore, 6270 Seton Hill St., Dayton, Ohio, and Frank J. Garner, Dayton, Ohio, assignors to said Robert D. Moore, by said Frank J. Garner, Dayton, Ohio
Filed Oct. 1, 1968, Ser. No. 764,107
Int. Cl. B65d *1/24, 11/20, 25/04*
U.S. Cl. 220—21 **5 Claims**



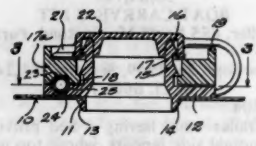
Several cell casings forming compartments for receiving battery cells made from resin filled with fiberglass are integrally joined together using resin and fiberglass to form an inner boxlike structure having compartments separated by partitions which is inserted into an outer boxlike structure made from the same material. The resultant battery tray is of a unitary construction having dimensionally stably and uniform partitions. The polyester resin and fiberglass are laid up in such a manner as to resist bending of the tray along its length when it is lifted from the ends thereof. This is accomplished in part by providing thicker walls along the length of the tray than the partition walls transverse to the length of the tray.

3,584,759
SEPARATION-RESISTANT CAPSULE
Bela N. Lorincz, Windsor, Ontario, Canada, assignor to Scherer-G.C. Limited, Toronto, Ontario, Canada
Filed June 19, 1969, Ser. No. 834,668
Int. Cl. B65d *41/00*
U.S. Cl. 220—42A **4 Claims**



A separation-resistant capsule for containing, for example, oral medication, having a sealing band established between telescopically engageable body and cap portions of the capsule. The sealing band is provided by conforming mating tapers on both said portions rendering the capsule substantially airtight when said portions are fully telescopically engaged with one another.

3,584,760
SAFETY CAPS FOR CONTAINERS
William A. Grinker, 4640 S. 14th St., Milwaukee, Wis.
Filed July 22, 1969, Ser. No. 843,432
Int. Cl. B65d *43/10, 43/6, 51/16*
U.S. Cl. 220—60 **2 Claims**



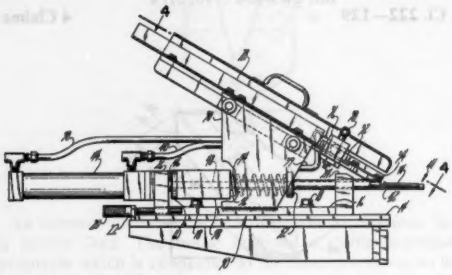
A safety cap assembly for containers of fluids with danger potential, including a cap with thumb piece lift normally

blocked by a shoulder immediately thereunder, and an annular rim blocking frontal access, with means for manual temporary removal of said blockades.

3,584,761
WORKPIECE FEEDING APPARATUS WITH RECIPROCABLE SHUTTLE

Richard J. Flanigan, Longmeadow; Ronald W. Chapin, Wilbraham, and Rudolph A. Mattson, Springfield, all of, Mass., assignors to Universal American Corporation, Springfield, Mass.

Filed Jan. 6, 1969, Ser. No. 789,294
Int. Cl. B65g *59/00*
U.S. Cl. 221—276 **13 Claims**

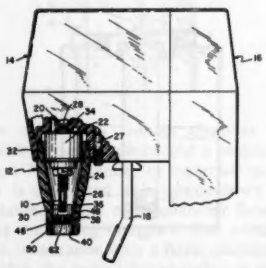


A magazine supports a plurality of workpieces in end-toward-end relationship so that the lowermost workpiece can be fed therefrom by a reciprocable shuttle, which shuttle drops the workpieces one after another onto a horizontally reciprocable tray for movement toward the work station of a centerless grinder or the like. A horizontally reciprocable plunger, moved by the same actuator which is used to move the tray, slides the workpiece off the tray to the work station. One embodiment is particularly well suited for headed workpieces, such as rivets.

3,584,762
ROOT BEER POSTMIX DRINK DISPENSER

Robert W. Vantroba, Wauconda, and Donald L. Allen, Skokie, both of, Ill., assignors to The Golconda Corporation, Chicago, Ill.

Filed Dec. 4, 1968, Ser. No. 781,008
Int. Cl. B67d *5/56*
U.S. Cl. 222—1 **16 Claims**

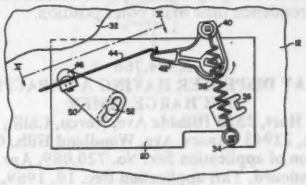


A carbonated postmix drink dispenser in which syrup under pressure is jetted through carbonated water under pressure to a zone of atmospheric pressure while the major portion of the carbonated water is segregated under pressure and aerated with minute air particles as it is expanded by CO_2 ebullitions at atmospheric pressure prior to final mixing with the major portion of the syrup.

3,584,763
DETERGENT DISPENSER HAVING AN OVERCENTER SPRING DOOR ACTUATOR

Edward H. Donselman, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 31, 1969, Ser. No. 795,670
Int. Cl. B67d *5/08*
U.S. Cl. 222—54 **7 Claims**

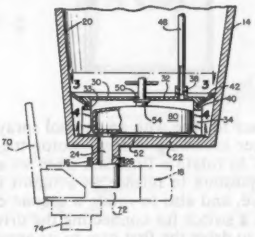


A dishwasher detergent dispenser in which the dispenser is held closed by an overcenter spring which, upon being urged past its overcenter position by electrically actuated means such as a bimetal, also provides the force to open the detergent dispenser.

3,584,764
BEVERAGE DISPENSER

Vance V. Elkins, Fort Lauderdale, Fla., assignor to The G & W Manufacturing Company, Conshohocken, Pa.

Filed Mar. 17, 1969, Ser. No. 807,735
Int. Cl. B67d *5/08*
U.S. Cl. 222—67 **9 Claims**

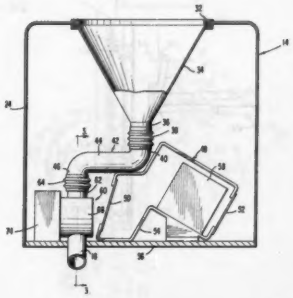


An improved float valve for dispensing syrup at a constant head and hence at a constant rate of flow to a soda fountain mixing valve in which the syrup is to be mixed with carbonated water.

3,584,765
SAMPLE EXTRACTOR

Clyde Orr, Jr., and Edward E. Weaver, both of Atlanta, Ga., assignors to Georgia Tech. Research Institute, Atlanta, Ga.

Filed Nov. 21, 1968, Ser. No. 777,709
Int. Cl. B67d *3/00*
U.S. Cl. 222—76 **5 Claims**



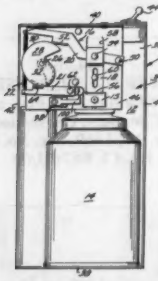
A small quantity or sample of particulate material which is representative of a much larger batch of material, such batch

in turn being representative of a large supply mass of the material, is extracted by feeding the batch to a dispensing head having two nozzles. The nozzles are alternately uncovered by a cyclically operated valve and a control is provided to variably proportion the residence times of the valve in its two positions so that the sample constitutes more or less of the batch. A second control is provided to increase the feed time for the batch as the residence time of the valve in that position discharging the sample is decreased in proportion to the residence time in its other position.

3,584,766
SPRAY DISPENSER HAVING A CAPACITOR DISCHARGE TIMER

Charles M. Hart, 2523 Hillside Ave, Norco, Calif., and Carlos A. Duque, 22943 Oxnard Ave, Woodland Hills, Calif.

Continuation of application Ser. No. 720,089, Apr. 10, 1968, now abandoned. This application Dec. 10, 1969, Ser. No. 880,494
Int. Cl. B67d 5/06; H01h 47/18
U.S. Cl. 222—76 **13 Claims**

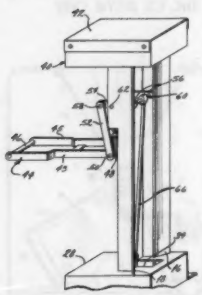


A spray dispenser for use with an aerosol spray container, the spray dispenser including a drive motor triggered by a time delay circuit to rotate a first cam from an armed position to a release position to release an actuator for opening the container valve, and also to rotate a second cam to subsequently operate a switch for connecting the drive motor to an energy source to drive the first cam to its armed position, at which point the switch is operated to disconnect the drive motor from the energy source.

3,584,767
CANISTER TAPPING DEVICE

Joseph Carl Dawson; Jay B. Brown, and Euel C. Pryor, all of 93 Ford Lane, St. Louis, Mo.

Filed May 12, 1969, Ser. No. 823,673
Int. Cl. B67b 7/24
U.S. Cl. 222—85 **6 Claims**

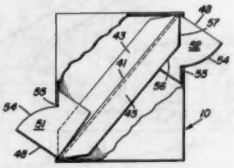


A canister tapping device is comprised of a support frame adapted to support a canister containing a fluid and having opposite walls, first and second piercing tubes movably mounted to the frame and facing the opposite walls of the canister, and a movable mechanism interconnecting first and second piercing tubes, the piercing tubes being movable from first positions wherein they are spaced from the opposite walls of the canister to second positions wherein they puncture the walls. The mechanism is adapted to be moved by means of a handle to cause the piercing tubes to be moved between their first and second positions.

3,584,768
SHIPPER DISPENSER PACKAGE

Robert E. Ascough, Bayonne; Alexander L. Giroux, Edison, and Daniel A. Serico, Lodi, all of, N.J., assignors to Westvaco Corporation

Filed Dec. 11, 1968, Ser. No. 782,977
Int. Cl. B65d 5/48, 5/74
U.S. Cl. 222—129 **4 Claims**

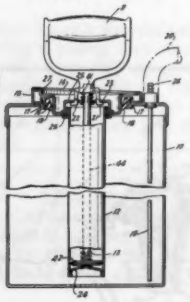


A dispensing package is disclosed which is formed from two integral blanks of paperboard, one blank forming an outer container having two compartments formed by a diagonally positioned divider/dispenser member constructed from the second blank and having integral spout portions for dispensing the packaged articles from first one compartment then the second compartment.

3,584,769
PRESSURE CONTAINER ASSEMBLY

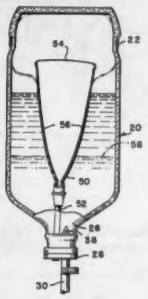
August H. Pinke, Hastings, Minn., assignor to H. D. Hudson Manufacturing Company, Chicago, Ill.

Filed Feb. 12, 1969, Ser. No. 798,731
Int. Cl. G01f 11/32
U.S. Cl. 222—340 **14 Claims**



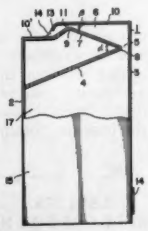
A pressure container is described which features a new closure assembly having a pressure release valve which opens to release the tank pressure before the tank cover can be removed. The container is also provided with a seal which increases in effectiveness as the pressure in the tank is increased. This pressure container can be economically manufactured and combines depressurization safety features with increased sealing effectiveness.

3,584,770
INTRAVENOUS BOTTLE HAVING EXPANDABLE INNER RECEPTACLE
Philip Taylor, 1903 E. Moyamensing Ave., Philadelphia, Pa.
Filed Jan. 28, 1969, Ser. No. 794,635
Int. Cl. B67d *3/00*
U.S. Cl. 222—479 6 Claims



An intravenous bottle which dispenses intravenous fluids by gravity feed. The bottle includes a sterile expandable receptacle which is connected to the atmosphere via an inlet port. As the fluid for intravenous injection is dispensed from the bottle, air is drawn into the expandable receptacle. The expandable receptacle acts to prevent the contact of the air from the atmosphere with the fluid to prevent spoilage thereof.

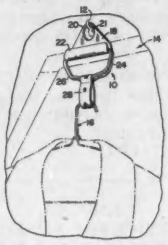
3,584,771
CONTAINER WITH MEANS FOR DISPENSING A FIXED QUANTITY OF MATERIAL
Katsuhiko Wakamatsu, 5-go, 10-ban, 2 chome Momoi, Suginami-ku, Tokyo-to, Japan
Filed Aug. 5, 1968, Ser. No. 750,266
Claims priority, application Japan, Mar. 29, 1968, 43/20,062
Int. Cl. G01f *11/26*
U.S. Cl. 222—457 5 Claims



A container comprising a main chamber for receiving therein materials to be consumed and a measuring chamber for dispensing a fixed quantity of materials such that when this container is supported in a upside-down position, the materials contained in the main chamber flow downwardly and fill up the measuring chamber. The container is, then laid on its side, whereupon only a fixed quantity of materials maintained within the measuring chamber is discharged out of the measuring chamber by gravity.

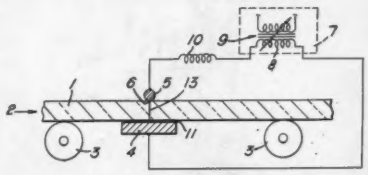
3,584,772
CLOTHES HANGER AND CARRIER
David E. Robertson, 322 Kenridge Road, Akron, Ohio
Filed Apr. 3, 1969, Ser. No. 813,128
Int. Cl. A45c *13/26*
U.S. Cl. 224—45 5 Claims

The clothes hanger and carrier comprises a flat frame means attachable at its upper end to a support, and a hook section is formed at the lower portion of such frame. A loop member engages the frame and extends downwardly therefrom while a flexible connector means operatively attaches a second loop member to the first loop member. The



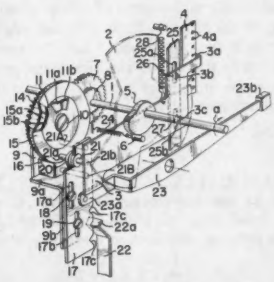
loop means and frame are of such size that a person's hand can readily be engaged with the lower portion of the frame means for carrying such means and any article attached to or suspended from the flexible connector means.

3,584,773
CUTTING OF GLASS
Francis John Grove, Eccleston, Saint Helens; Donald Curtis Wright, Blackrod, Bolton, and Francis M. Hamer, Ormskirk, all of, England, assignors to Pilkington Brothers Limited, Liverpool, Lancashire, England
Filed Mar. 25, 1969, Ser. No. 810,249
Claims priority, application Great Britain, Mar. 29, 1968, 15302/68
Int. Cl. B26f *3/08*
U.S. Cl. 225—2 6 Claims



Glass is cut by employing high frequency dielectric heating of the glass through its thickness along a path which embraces a cutting line to cause a controlled fracture to run along the cutting line from a weakened point on the glass surface.

3,584,774
FILM PULL-DOWN MECHANISM FOR PROJECTORS
Tatsusuke Kadowaki, Yokohama-shi, Japan, assignor to Kabushiki Kiashi Ricoh, Tokyo, Japan
Filed Sept. 23, 1969, Ser. No. 860,252
Claims priority, application Japan, Sept. 27, 1968, 43/84589
Int. Cl. G03b *1/22*
U.S. Cl. 226—62 1 Claim



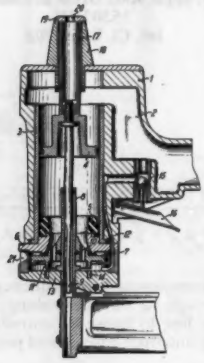
A film pulldown mechanism for projectors wherein a film pulldown plate which is vertically reciprocated in

synchronism with the rotation of a shutter rotating shaft is rocked about a line at a right angle relative to the axis of said vertical reciprocal movement thereof by a contact element or cam follower which is made in contact with the cam surface of one of cams each rotating at a different speed in response to the rotation of the shutter shaft and which is reciprocated along the axial direction thereof in response to the contour of said cam surface.

In response to the rotation of the selected cam, the number of frames of film pulled down per unit time may be varied and the still projection is possible when the contact element is disengaged from the cams.

Representative FIG.: FIG. 1

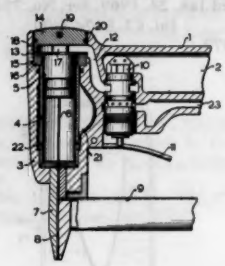
3,584,775
CONTROL DEVICE FOR A PNEUMATICALLY OPERATED FASTENER MACHINE
Dieter Volkmann, Leinstrasse 49, Neustadt/Rbge, and Jurgen Korth, Birkenweg 7, Berenbostel, both of, Germany
Filed June 27, 1969, Ser. No. 837,135
Claims priority, application Germany, June 29, 1968, P 17 03 704.6
Int. Cl. B25c *1/04*
U.S. Cl. 227—130 **10 Claims**



In a pneumatically operated fastener machine of the type having a working cylinder and a piston reciprocable therein, the upper end of the cylinder permanently communicates with a source of compressed air and the lower end of the cylinder via a manually operated control valve alternately communicates with said source of compressed air or with the atmosphere. In the bottom of the cylinder vent passages communicating with the atmosphere are provided. During the working stroke of the piston the vent passages are open, and during the return motion of the piston the vent passages are closed by an annular valve.

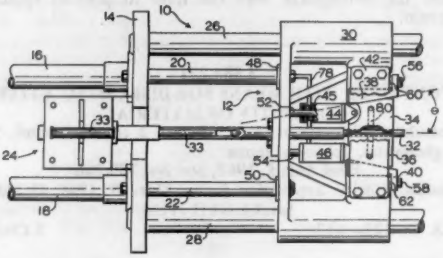
3,584,776
PNEUMATICALLY ACTUATED STAPLING TOOL
Adolf Bolte, 34 Boehmerstrasse, Hannover, Germany
Filed Sept. 30, 1969, Ser. No. 862,176
Claims priority, application Germany, Oct. 4, 1968, P 18 01 162.6
Int. Cl. B25c *1/04*
U.S. Cl. 227—130 **5 Claims**

In a stapling device in which air under pressure is used both to actuate a piston on a staple driving stroke and to return the piston to its initial position, the piston is held in this position by a magnet which is mounted in a cylinder



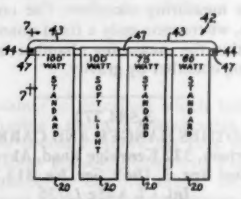
housing in such a manner that its magnetic field surrounds a portion of the piston when in its initial position.

3,584,777
TAILSTOCK AND FEED MEANS THEREFOR
Calvin D. Loyd, Peoria, and Ronald L. Satzler, Metamora, both of, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Dec. 11, 1968, Ser. No. 783,043
Int. Cl. B23k *23/00*
U.S. Cl. 228—2 **9 Claims**



A tailstock in which the work is firmly held in blocks which are biased together by hydraulic and/or spring means. A formula for determining whether the workpiece will be held within the blocks during friction or inertia welding. Work is fed into the rear of the tailstock from a hopper and delivery means when the pressure forcing the blocks together is temporarily relaxed.

3,584,778
LIGHT BULB CARTON HOLDER
William B. Hopkins, 2616 Southeast Boulevard, Spokane, Wash.
Filed July 7, 1969, Ser. No. 839,214
Int. Cl. B65d *5/02*
U.S. Cl. 229—40 **6 Claims**



A holder is described for containing a plurality of light bulb cartons in easily accessible locations to increase the effi-

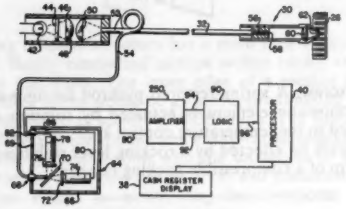
ciency of display and bulb replacement. The holder is an elongated tubular structure having elongated vertical side openings for permitting the convenient insertion and removal of any one of the contained light bulb cartons. A handle tab formed integrally with a rear wall and a top wall extends therefrom. In addition a hanger is provided that may be conveniently attached to a wall surface. The hanger has a bar that is set out from a back plate to form a vertical slot therebetween to receive the tab handles from one or more holders.

3,584,779

OPTICAL DATA SENSING SYSTEM

Clarence W. Kessler, Dayton; Ollah Combs, Morrow; Larry D. Miller, Miamisburg, all of, Ohio, and Frank S. C. Mo, Bedford, Mass., assignors to The National Cash Register Company, Dayton, Ohio

Filed Oct. 7, 1968, Ser. No. 765,528
Int. Cl. G06k 7/10
U.S. Cl. 235—61.11 **4 Claims**



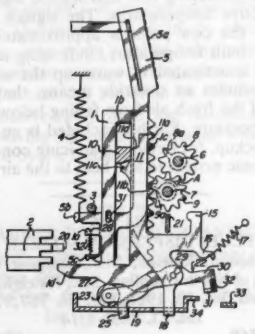
A semiautomated sensing system which employs a hand-held, optical-probe scanner for detecting coded information from a color-coded record member which may, if desired, be secured to an article. Data is color-coded (by bands of different colors) on the record member, and, when the data is to be read, the probe scanner is "scribed" or glided across the bands of color on the record member. During the "scribing," or reading, operation, the changing light signals resulting therefrom are routed to electronic circuitry which converts the light signals to electrical signals which are routed to a processor for use thereby. The output from the processor may be used to drive a sales register, an accounting machine, or other display and electronic computation and printout equipment.

3,584,780

COLUMN CARRYING MECHANISM IN CALCULATING MACHINE AND THE LIKE APPARATUS

Kenji Miyake, Kunitachi-shi, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Dec. 30, 1969, Ser. No. 889,167
Claims priority, application Japan, July 3, 1969, 44/52625
Int. Cl. G06c 15/26
U.S. Cl. 235—137 **2 Claims**



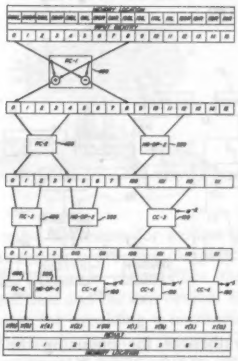
In a calculating machine or the like apparatus having a plurality of vertically movable rack bars arranged in side-by-side parallel relation and accumulator gears cooperating with each of said rack bars, a cam is provided on each accumulator gear, while a first lever to be operated by said cam is provided on one side of each rack bar, and a second lever is connected to the first lever to be operated thereby. When the first lever is lowered by the cam upon rotation of the accumulator gear, the second lever is also lowered by the first lever and pushed by a push rod in its lowered position, whereby the rack bar is lowered and at the same time the second lever of the adjacent rack bar is pushed by the second lever of the first-mentioned rack bar, so that the adjacent rack bar is also lowered, and thus the column is carried.

3,584,781

FFT METHOD AND APPARATUS FOR REAL VALUED INPUTS

James O. Edson, Mansfield Township, Warren County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed July 1, 1968, Ser. No. 741,432
Int. Cl. G06f 7/38
U.S. Cl. 235—156 **9 Claims**



Methods and apparatus for generating Fourier series coefficients by fast Fourier transform techniques are disclosed. When the input sequence to be transformed includes only real-valued signals, important savings of storage and computation time are realized through the elimination of conjugate results. Instead, only one of a pair of conjugate final results, and the intermediate results leading to them, are explicitly generated; the remaining results are derived by selective conjugation. Techniques for facilitating the computing methods by selective reordering and accessing are also described.

3,584,782

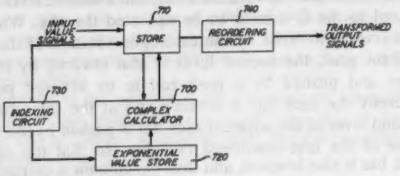
FAST FOURIER TRANSFORM METHOD AND APPARATUS

Glenn D. Bergland, Moris Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed July 1, 1968, Ser. No. 741,507
Int. Cl. G06f 7/38, 15/34
U.S. Cl. 235—156 **20 Claims**

A method and apparatus is disclosed for performing fast Fourier transformations on real-valued input signals. A systematic procedure is followed in accessing operands on succes-

sive iterations, and a uniform set of operations are used at each such iteration. Reductions are realized in the number of



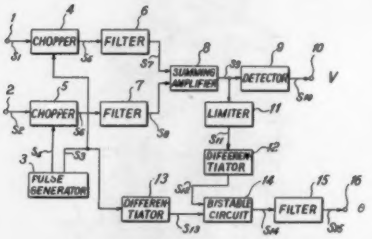
redundant computations and the number of storage locations relative to the well-known complex-input transformation.

3,584,783

VECTOR SYNTHESIZER FOR CONTINUOUSLY OBTAINING THE MAGNITUDE AND DIRECTION OF A VECTOR FROM THE ORTHOGONAL COMPONENTS OF THE VECTOR

Yasuhiro Kobori, Tokyo-to, Japan, assignor to Kaijo Denki Kabushiki Kaisha, Tokyo-to, Japan

Filed Dec. 18, 1968, Ser. No. 784,637
Claims priority, application Japan, Dec. 20, 1967, Oct. 22, 1968, 42/81147;43/76471
Int. Cl. G06g 7/22
U.S. Cl. 235—189 **5 Claims**



A vector synthesizer for obtaining the magnitude and direction of a vector from the Y-component and X-component of the vector, where the Y-component and X-component are converted respectively a first modulated signal and a second modulated signal the carrier of which has the same frequency as the carrier of the first modulated wave and a phase position advanced, by 90°, from the phase position of the carrier wave of the first modulated wave. The magnitude is obtained by detecting the envelope of a sum signal of the first modulated wave and of the second modulated wave. The direction is obtained by detecting the phase difference between the sum signal and the carrier of one of the first and second modulated waves.

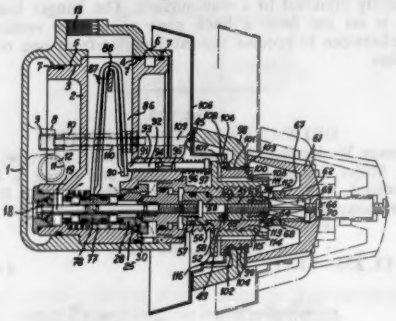
3,584,784

MIXING VALVE FOR HOT AND COLD WATER

Robert Burhop, Le Manoir, Bernex, Geneva, Switzerland

Filed Apr. 17, 1969, Ser. No. 817,114
Claims priority, application Switzerland, May 8, 1968, 6873/68
Int. Cl. G05d 23/13
U.S. Cl. 236—12 **8 Claims**

A mixing valve for hot and cold water, has a body with a hot and a cold water inlet and an outlet nozzle. The body bears a flow control knob and a temperature control knob which may be incorporated in one knob. These controls are borne on a stem bearing two valves forming part of two gates for simultaneous control of the flows of hot and cold water. A bush sliding coaxially on the stem downstream of the two gates and upstream of the mixing chamber forms a differential closure actuated by a thermostatic element housed in the mixing chamber. The relative position of one valve to the other on the stem is axially adjustable by means of a threaded tubular cap bearing it on the stem and fixable by a



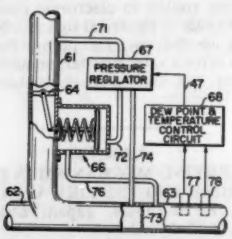
locking screw. A spring-restored pushrod forming a stop for the thermostatic element is actuated by rotation of a hub connected to the temperature control knob. Flow control can alternatively be effected by a rocking lever stabilized by frictional grip of a compressible packing box seal.

3,584,785

ELECTRONIC ANTI-ICE CONTROL

Dan S. Matulich, Rolling Hills Estates, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Mar. 24, 1969, Ser. No. 809,510
Int. Cl. G05d 11/16
U.S. Cl. 236—13 **12 Claims**



An electronic control system, for an air conditioning unit, has temperature probes for sensing both the dry bulb temperature and the wet bulb temperature (dew point) of a fresh air stream and producing first and second signals representing the respective temperatures. The signals are compared and whenever the dew point is approximately equal to or above the dry bulb temperature, indicating an icing condition, a means is activated to warm up the air stream. The system also includes an override means, that prevents the temperature of the fresh air from falling below a preselected minimum temperature. Further included is an ice collection screen, as a backup, for detecting an icing condition to override the electronic system to add heat to the air stream.

3,584,786

FLUID DISPERSION NOZZLE

William H. Johnson, Raleigh, N.C., assignor to Patent and Development of North Carolina, Inc., Raleigh, N.C.

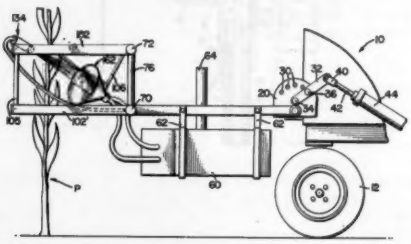
Filed Dec. 30, 1968, Ser. No. 787,974
Int. Cl. B05b 1/14
U.S. Cl. 239—568 **7 Claims**

A single element fluid dispersion nozzle for achieving unusually fine atomization of liquids and a wide angle flat-fan dispersion of both liquids and gases uniformly and over a

wide range of capacity and pressure. These features, heretofore unavailable commercially in a single element, have been achieved in practice by a unique design that: (1) minimizes the diameter of the orifice aperture down to about 0.001 inch, (2) maximizes the dispersion angle up to at least 180°, (3) assures a uniformly curved corona orifice cavity at its outer extremity, (4) allows extensible lengths with multiple apertures therein and, (5) provides equipressure among apertures.

The long tubelike structure has a main feed cavity with at least one fluidly connected corona orifice cavity extending outwardly therefrom. The inner edge of a section thru the corona orifice cavity would be an arc, approximating a circle, having a diameter as minute as 0.001 inch. The simplicity of this structure and the unique and easily varied relationship of the cavities, in combination with the technique of intersection to produce minimum orifice areas and maximum dispersion angles results in outstanding improvements in performance, manufacturing and economy.

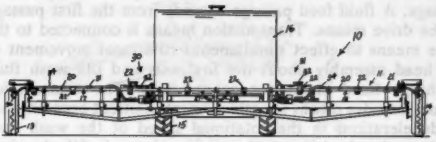
3,584,787
SPRAY MECHANISM
J. W. Thomason, Route #1, Box 278, Gallion, Ala.
Filed Aug. 12, 1968, Ser. No. 751,792
Int. Cl. B05b *1/20*
U.S. Cl. 239—121 **6 Claims**



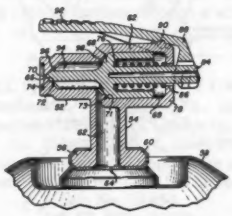
An open framework is pivotally supported on a tractor or the like, and power operated means is connected therewith for adjusting the position of the framework. A supply tank is connected with a plurality of nozzles adjustably mounted on the framework. The framework defines a plurality of plant gathering spaces, said spray nozzles being adapted to spray plants disposed within such gathering spaces. A plurality of spray receiving means are mounted on the framework and positioned to receive spray from the various spray nozzles. These spray receiving means are connected with storage tank means supported by the framework.

3,584,788
SWATH MARKER FOR FIELD SPRAYING DEVICE
Richard W. Lloyd, Lewiston, Idaho, assignor to The Lloyd Ranch, Lewiston, Idaho
Filed Jan. 6, 1969, Ser. No. 789,213
Int. Cl. E01c *19/16*
U.S. Cl. 239—172 **6 Claims**

A swath marker is described for applying spaced spots of visible marking fluid along the edge of a swath of soil or foliage traversed by an agricultural implement. The swath marker is mounted on the agricultural implement and has a separate small tank containing the marking liquid and an electrically operated diaphragm pump for pumping marking liquid to a spray nozzle at one end of the spray vehicle for marking the edge of the swath. An adjustable timer is operably connected to the diaphragm pump for activating the pump as desired intervals.

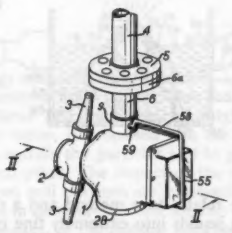


3,584,789
SELF-PURGING NOZZLE AND VALVE APPARATUS
John S. Traynor, 30 Churchill Ave., Palo Alto, Calif.
Filed Feb. 25, 1969, Ser. No. 802,042
Int. Cl. B05b *15/02*
U.S. Cl. 239—117 **8 Claims**



A nozzle and valve apparatus for aerosol dispensers and the like having means for preventing clogging or contamination of dispensed materials or residues thereof trapped between a hermetic seal and the exit orifice. Means are coupled to the actuator for providing a mechanical purging of the exit orifice after each utilization thereof. The mechanical purging and sealing means is retracted from the nozzle orifice upon actuation of the nozzle and valve apparatus so as not to interfere with the operation thereof.

3,584,790
OIL TANK WASHING MACHINE
Robert Benham Bonfield, Goring-by-Sea, England, assignor to Dasic Equipment Limited, Southampton, England
Filed Jan. 2, 1969, Ser. No. 788,421
Claims priority, application Great Britain, Jan. 9, 1968, 1264/68
Int. Cl. B05b *3/00*
U.S. Cl. 239—227 **12 Claims**



The machine for washing the interior surface of a hollow structure includes a head assembly mounted for rotation

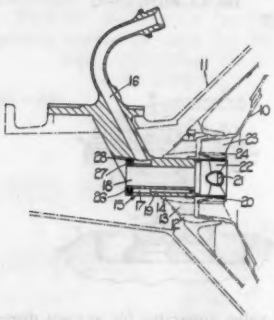
about a first axis. A wash fluid discharge head is mounted on head assembly for rotation with respect thereto about a second axis at an angle to said first axis. The head assembly has a passage for receiving and transferring wash fluid to the wash fluid discharge head. A wash fluid actuated rotary drive means is mounted on the head assembly externally of the passage. A fluid feed passage extends from the first passage to the drive means. Transmission means is connected to the drive means to effect simultaneous rotational movement of the head assembly about the first axis and the wash fluid discharge head about the second axis. The transmission means includes means for effecting intermittent accelerations or decelerations in the rotational speed of the wash fluid discharge head relative to the rotational speed of the head assembly.

3,584,791

FUEL SPRAYERS

John Frederick Stratton, Blackburn, and Eric Gates, Preston, both of, England, assignors to Joseph Lucas Industries Limited, Birmingham, England

Filed Aug. 21, 1968, Ser. No. 754,349
Int. Cl. B05b 7/10
U.S. Cl. 239—404 **3 Claims**



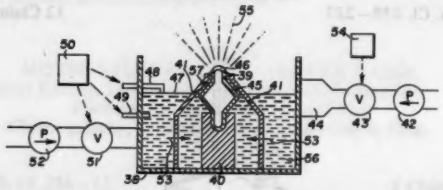
Fuel spraying apparatus having a sprayer with an annular row of outlets surrounding an axial passage for air, a first annular swirler having blades on which fuel from the outlets impinge an annular air swirler surrounding the sprayer.

3,584,792

DEVICE FOR LIQUID ATOMIZATION AND FLUID BLENDING

William H. Johnson, Raleigh, N.C., assignor to Patent and Development of N.C., Inc., Raleigh, N.C.

Continuation-in-part of application Ser. No. 787,974, Dec. 30, 1968. This application Apr. 18, 1969, Ser. No. 817,370
Int. Cl. B05b 7/06
U.S. Cl. 239—424 **11 Claims**



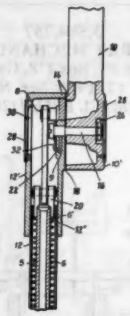
This disclosure relates to a method and a device for efficiently atomizing liquids into extremely fine cloudlike particles by discharging fluid thru one or more apertures located, preferably between 1 mm. and 100 mm., above a controllable free surface of the liquid to be atomized. The area adjacent to the fluid-discharging aperture is linked to the liquid by at least two distinct wettable surface means. In operation the liquid, at least partially due to pressure differential, adhesion, cohesion, surface tension and capillarity, rises to and surrounds completely the apertures. These factors and means, along with a means of achieving a wide flat-fan fluid dispersion and a means of varying the number of apertures, produce a uniformly fine, highly stressed film on all sides of the apertures and results in excellent metering control, uniform atomization, efficient dispersion and atomization, and clogfree operation. Secondary blending of the emitting fluid with atomized liquid in the vicinity of the aperture by the removal of one or more of the said liquid wettable surface means, permitting certain apertures to emit only fluid while the remainder are emitting atomized liquid, provides added efficiency and control.

3,584,793

SWINGABLE JOINT FOR LOAD SUSPENSION, PARTICULARLY FOR USE IN ASEPTIC SURROUNDINGS

Karl F. Ilzig, Hanau, and Klaus Junginger, Niederrodenbach, both of, Germany, assignors to Original Hanau Quarzlampen GmbH, Hanau, Germany

Filed Nov. 24, 1969, Ser. No. 879,019
Claims priority, application Germany, Nov. 23, 1968, P 18 10 552.7
Int. Cl. A61b 1/06
U.S. Cl. 240—41.15 **6 Claims**



To support operating room lights or the like from a ceiling, a joint is provided interconnecting a pair of half shells, one arm, for example mounted on a ceiling, extending from one shell side and the other arm, for example supporting an operating room light, extending from the other shell side, with both shells having matching, circular surfaces facing each other, preferably lapped, or ground to provide for free rotation, and direct access for cleaning and maintenance in aseptic condition. One of the arms is preferably spring loaded, and access to the internal spring-loading mechanism can be had through openings, closed off by cover plates, through the shells.

3,584,794

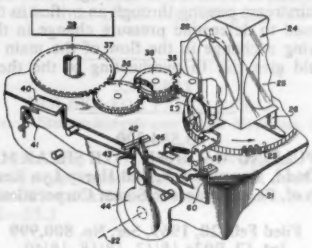
FIRING MECHANISM FOR PERCUSSIVELY IGNITABLE FLASH UNITS

David E. Beach, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 14, 1968, Ser. No. 767,098
Int. Cl. G03b 15/02
U.S. Cl. 240—1.3 **7 Claims**

A multiple flash unit containing percussively ignitable lamps and photographic apparatus such as a still camera for

accepting and percussively firing the lamps successively. A striker to fire the lamps may be incorporated either in the multilamp unit or the apparatus and is cocked to fire the lamp in the operative position during indexing of the unit.

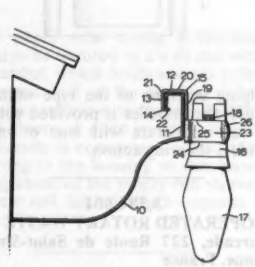


3,584,795

FLEXIBLE HANGER FOR ELECTRIC LAMP SOCKET

John H. Baird, 137 Richland Crescent Borough of Etobicoke, Metropolitan Toronto, Ontario, Canada

Filed Dec. 12, 1968, Ser. No. 783,282
Int. Cl. F21v *21/10*
U.S. Cl. 240—52 **2 Claims**



A flexible hanger for hanging an electric lamp socket on a house eave trough, the latter having an upstanding generally vertical edge flange, a horizontal web extending laterally therefrom, and a second generally vertical flange depending from the web and spaced apart from the first flange. The flexible hanger consists of two arms which partially surround and resiliently clasp an electric lamp socket. A hanger hook extends from the arms and is adapted to overlie the web and two flanges of the eave trough. The hook includes an inward extension which locks under the eave trough second flange and serves to securely retain the hanger in place on the eave trough.

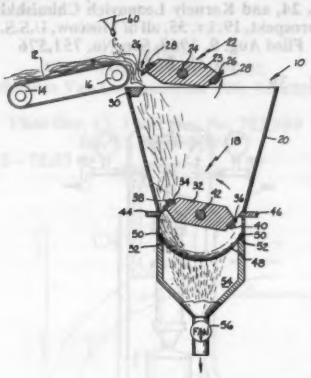
3,584,796

MANUFACTURE OF GLASS FIBER BLOWING WOOL

Paul Lewis Earle, Martinsville, and Andrew Musz, Raritan, both of, N.J., assignors to Johns-Manville Corporation, New York, N.Y.

Filed June 2, 1969, Ser. No. 829,476
Int. Cl. B02c *18/06, 18/22, 23/06*
U.S. Cl. 241—4 **12 Claims**

Glass fiber blowing wool is produced from bonded glass fiber material containing about 3 percent to about 15 percent by weight of binder and having a density in the range of about 0.2 to about 20 pounds per cubic foot by cutting the material and immediately removing the severed material from the cutting area by suction through a screen.

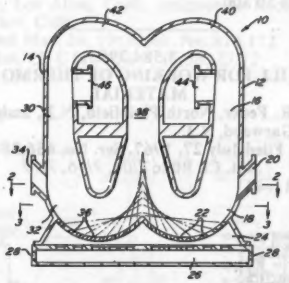


3,584,797

MULTIPLE SECTION FLUID ENERGY GRINDING MILL

Nicholas N. Stephanoff, Haverford, Pa., assignor to Fluid Energy Processing & Equipment Company, Hatfield, Pa.

Division of Ser. No. 703,647, Feb. 7, 1968, Pat. No. 3,508,714 which is a continuation-in-part of application Ser. No. 455,887, May 22, 1965, now Patent No. 3,456,887. Filed Mar. 11, 1970, Ser. No. 18,454
Int. Cl. B02c *19/06*
U.S. Cl. 241—5 **5 Claims**



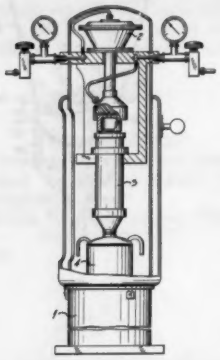
A fluid energy mill utilizing at least two opposed generally annular mill portions. Solid particles are fed to either one or both mill portions and high velocity, high-pressure fluid, either a gas or vapor, is propelled into the bottom of each mill portion to entrain the particles and to project the particles against each other. The impact of the streams of particles from the two mill portions are substantially angular and may be effected in an area between the two mill portions for a more direct impact, or the streams may be projected in the same annular path for a less direct impact and a greater degree of blending to form a circulating vortex.

3,584,798

APPARATUS FOR PREPARING SUSPENSIONS OF BIOLOGICAL TISSUES, CELLS AND BACTERIA

Lev Illarionovich Metreveli, FrunzensKaya nabereyhnaya 28 Kv. 118; Vladimir Dmitrievich Zhukov, Ulitsa Goncharova, 8/13, Kv. 24, and Kornely Leonovich Chimishkian, Leningradsky prospekt, 19, kv. 35, all of Moscow, U.S.S.R.

Filed Aug. 9, 1968, Ser. No. 751,576
Int. Cl. B02c *19/06*
U.S. Cl. 241—39 2 Claims



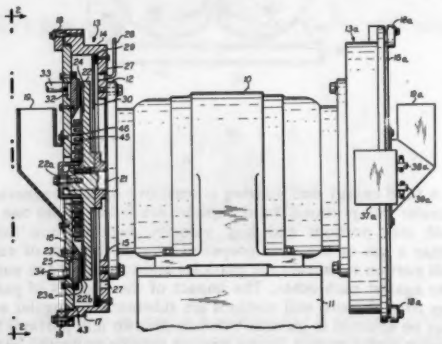
A device is provided for preparing subcellular suspensions of biological tissues, cells and bacteria and comprises a high-pressure chamber which receives the material to be comminuted and is in communication with a source of gas under high pressure. A receiver for suspended product is disposed beneath the high-pressure chamber and communicates therewith via an outlet passageway of not less than 0.5 mm. in cross section and a spiral tube which is situated in the receiver. A valve is fitted in the passageway to close the same and open only when a predetermined pressure is built up in the chamber, whereupon the material is instantaneously extruded through the passageway and is comminuted while passing therethrough. The suspended product then passes into the spiral tube where it is separated from the gas. The valve may be in the form of a membrane which breaks under the predetermined pressure of the gas built up in the chamber. The pressure at which the membrane ruptures is not less than 50 atm.

3,584,799

DISC MILL FOR WORKING OF THERMOPLASTIC MATERIAL

Friedhelm R. Feder, North Plainfield, N.J., assignor to Wedco, Inc., Garwood, N.J.

Filed July 27, 1967, Ser. No. 656,384
Int. Cl. B02c *7/04, 7/16, 7/17*
U.S. Cl. 241—44 9 Claims



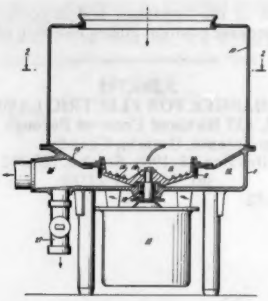
A disc mill having a pair of milling discs mounted on each end of drive shaft, well suited to milling of thermoplastic materials in an air stream. One of the discs of each pair rotates and structure is provided for circulating air for cooling over the rotating disc. The other disc can be stationary and water cooled. One disc working surface can be flat, the other inclined, with the flat surface terminating outwardly of the inclined surface; this facilitates alignment. The pressure of a small airstream passing through an orifice in the housing can be sensed to determine pressure change in the housing accompanying a change in the flow of the main air stream which would give rise to overheating of the thermoplastic material.

3,584,800

WASTE PULPING MACHINE WITH SHEAR MEMBERS

Victor D. Dodd, Honey Brook, and Harry Lyn Kemper, Narvon, both of, Pa., assignors to Somat Corporation, Pomeroy, Pa.

Filed Feb. 20, 1969, Ser. No. 800,999
Int. Cl. B02c *18/12, 18/18, 18/40*
U.S. Cl. 241—46.06 2 Claims



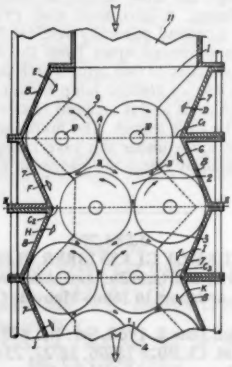
A waste-pulping machine of the type utilizing a rotating impeller in which the impeller is provided with one or more blades which can cooperate with one or more stationary blades to provide a shearing action.

3,584,801

HAMMER-OPERATED ROTARY WASTE CRUSHERS

Andre F. Fourcade, 227 Route de Saint-Simon, Toulouse, Haute-Garonne, France

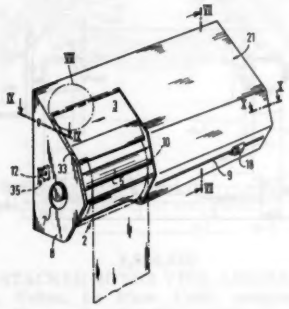
Filed Mar. 14, 1968, Ser. No. 712,981
Claims priority, application France, Mar. 24, 1967, 100,164
Int. Cl. B02c *13/04, 13/20, 4/02*
U.S. Cl. 241—138 8 Claims



A crusher for garbage, waster material and like products, devoid of grates and grate cleaners, constituted by a channel

subdivided into superposed preferably identical sections enclosed between vertical sidewalls and parallel oblique front and rear walls, the obliquity of the walls in any two successive sections facing opposite directions; hammer-carrying rotors arranged in staggered formation are revolvably carried by horizontal shafts the axes of which lie in parallelism with the oblique walls in the planes separating any two successive sections.

3,584,802
HOLDER FOR PAPER ROLLS
Horst Sieber, 9 Stolzenbergstrasse 8166 Neuhous, Newhouse, Germany
Filed May 9, 1968, Ser. No. 728,013
Claims priority, application Germany, May 9, 1967, S109797
Int. Cl. A47k *10/22, 10/32;* **B65h** *19/04*
U.S. Cl. 242—55.3 **6 Claims**

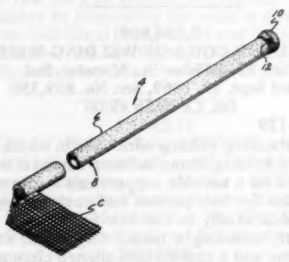


A holder for paper rolls having a box-shaped housing which is adapted to be secured to a wall and with the housing supporting a mandrel which holds several rolls in a coaxial relationship. An end wall of the housing defines a circular opening which is concentric with the mandrel for the ejection of an empty roll sleeve. A slide is axially movable along the mandrel and a handle is connected to the slide and extends through an opening in the housing so that movement of the slide results in ejection of the empty roll sleeve and the forwarding of a new roll into position opposite a dispensing opening.

ERRATUM

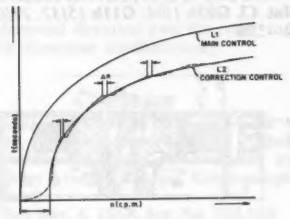
For Class 242—55 see:
Patent No. 3,584,817

3,584,803
HOLDER FOR NEEDLEPOINT CANVAS WORK
Elsa S. Williams, Needlecraft House, West Townsend, Mass.
Filed Mar. 17, 1969, Ser. No. 807,582
Int. Cl. B65h *75/02, 75/28*
U.S. Cl. 242—68 **4 Claims**



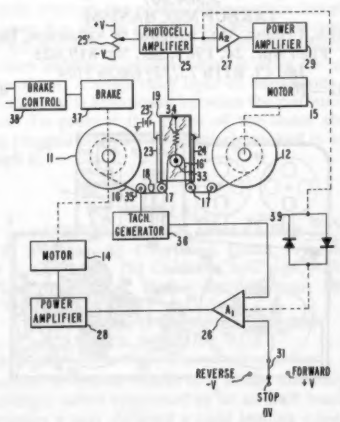
A needlepoint canvas backing work holder in the form of an elongated hollow rod having an enlarged turning thimble capping one end and provided with a lengthwise slot for securing a marginal edge portion of the canvas and winding it on the rod for convenient temporary storage and for partially unrolling the same to expose and work on any given selected area thereof.

3,584,804
WEB WINDING CONTROL
Cornelis Johannes Van Os, Zonstraat 100, Enschede, Netherlands
Filed Dec. 13, 1968, Ser. No. 783,509
Int. Cl. B65h *59/38*
U.S. Cl. 242—75.53 **8 Claims**



An apparatus for controlling the winding or unwinding of rolls of web material, such as fabric and paper, at a constant web velocity on or from a roller connected with a controllable pump-hydromotor combination. A main control of coarse continuous adjustment of the combination is used to produce a continuous primary speed curve which is a rough approximation of the desired theoretical speed curve of the hydromotor. A correction control for intermittent fine adjustment of the combination is superimposed upon said primary curve to produce a secondary continuous speed curve in steps which cross the corresponding parts of the theoretical curve at a considerable angle. A measuring device generates a signal in response to a predetermined deviation from the constant web velocity, said signal being used for periodically switching the correction control on and off.

3,584,805
TAPE TRANSPORT APPARATUS
Lester H. Lee, Los Altos, Calif., assignor to Recortec, Inc., Mountain View, Calif.
Filed Mar. 24, 1969, Ser. No. 818,172
Int. Cl. G11b *15/06, 15/58, 23/12*
U.S. Cl. 242—184 **22 Claims**



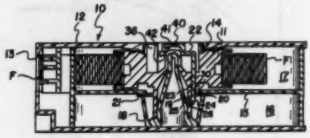
A reel-to-reel tape drive is provided, each reel drive motor being included in separate servo loop systems. A tape ten-

sioning means is employed which produces a tape loop and the length of the tape loop is measured to control at least one of the reel motor servo loops, the reel motors rotating under control of the servo to maintain the length of the loop, and thus the tension of the tape, constant. A tape speed measuring device is used to control the servo loop of one of the motors to precisely determine and maintain the speed of the tape.

3,584,806
ANTIBACKUP MECHANISM FOR THE TAKEUP SPOOL IN A FILM CARTRIDGE

Evan A. Edwards, and Robert C. Sutliff, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 1, 1969, Ser. No. 838,276
Int. Cl. G03b *1/04*; G11b *15/32, 23/04*
U.S. Cl. 242—198 **4 Claims**

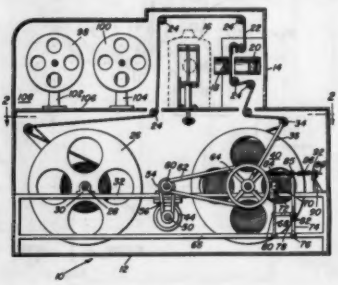


An antibackup mechanism in a movie film cartridge is disclosed, which prevents reverse rotation of the takeup spool. In the preferred embodiment the mechanism is a ratchet coupling between the spool and the cartridge housing, comprising a first ratchet member mounted in the cartridge for movement transverse to the axis of rotation of the spool, and a second ratchet member mounted on the spool for rotation therewith and for axial movement between a first position in which the ratchet members cooperate to prevent rotation of the spool in one direction and permit rotation of the spool in the opposite direction for winding up film, and a second position in which the ratchet members are disabled. The second ratchet member has a detent biased radially toward engagement with a notch defined by the spool. The notch has a ramp surface inclined with respect to the axis of rotation of the spool so that the detent and notch cooperate to releasably retain the second ratchet member when it is in the first position and to urge the second ratchet member toward that first position when it is in the second position. In addition the ratchet member on the spool can include a cup-shaped portion defining a cylindrical bore that slidably fits over a cylindrical projection on the spool to assure correct alignment of the ratchet member with respect to the spool when the ratchet member is being moved axially.

3,584,807
TAKEUP MECHANISM

Tom F. Smith, Urbana, Mo., assignor to Autoscope, Inc.

Filed Apr. 24, 1969, Ser. No. 819,025
Int. Cl. B11b *15/32*; G03b *1/04*
U.S. Cl. 242—201 **4 Claims**

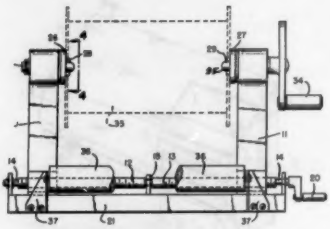


A takeup mechanism in the form of a sprocket wheel engaging a film which the sprocket wheel mounted on a spring-biased arm so that the arm will swing in response to increase and decrease in tension on the film. A takeup reel brake is actuated and released in response to pivotal movement of the spring-biased arm thereby applying and releasing the brake in response to tension on the film.

3,584,808
REEL-HOLDING DEVICE

Stanley F. Staples, and William F. Hamilton, both of Alexandria, Va., assignors to Staples Research Corporation, Alexandria, Va.

Filed Mar. 21, 1969, Ser. No. 809,184
Int. Cl. B65h *19/02, 75/02, 23/06*
U.S. Cl. 242—68.4 **5 Claims**



This invention relates to reel-holding devices, and more particularly to devices for holding large reels such as those used for photographic films. It consists of a base with two arms movable toward or away from each other with reel-engaging discs projecting inwardly from the outer free ends of each of said arms. By means of two jackscrews the arms are caused to move toward or away from each other so that a reel may be engaged or disengaged by the said discs. Between each disc and its complementary support, there is a brake in the form of a washer-shaped element of compressible material so that the rotation of the reel may be frictionally retarded. The jackscrews cooperate with nuts which can be cylindrical, hexagonal, or any other shape. The nuts are internally threaded and are located in a cavity near the base ends of the arms. The cylindrical nuts are arranged in the cavities and have a loose fit in the direction perpendicular to the axis of the jackscrew. This construction eliminates the precision machining and adjustment that would be required for making a jackscrew function properly that is restrained by more than two bearing points.

ERRATUM

For Class 242—118 see:
Patent No. 3,584,819

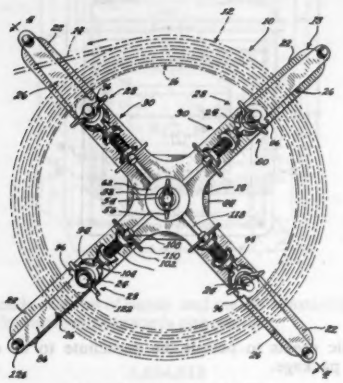
3,584,809
REEL FOR COILS OF WELDING WIRE

Ralph Ogden, Sr., 1304 Fisher St., Munster, Ind.

Filed Sept. 19, 1969, Ser. No. 859,350
Int. Cl. B65h *49/00*
U.S. Cl. 242—129 **6 Claims**

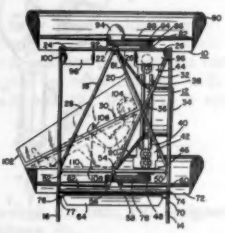
A reel for mounting welding wire coils in which the reel is in the form of a holding frame defining a central hub portion that is mounted on a suitable support and four arms extending radially from the hub portion and each equipped with a stud that projects axially to the hub portion and receives a holder member, including a holder finger that engages the coil to hold same and a cam surface aligned circumferentially with the holder finger and engages within the coil core to bind same to the reel, a latch device for the respective finger members that latches the finger members in extended and

retracted positions circumferentially to the stud, while permitting lateral adjustment longitudinally to the studs, and a



clamp nut for each stud to clamp the respective finger members against a coil applied to the reel frame.

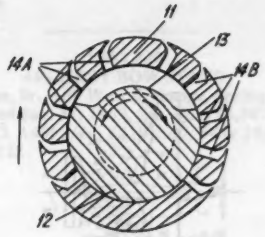
3,584,810
STACKED ROTOR VTOL AIRCRAFT
Edward J. Velton, La Mesa, Calif., assignor to General Dynamics Corporation, San Diego, Calif.
Filed May 8, 1969, Ser. No. 822,917
Int. Cl. B64c *27/20*
U.S. Cl. 244—23 **8 Claims**



A stable tail setter VTOL aircraft having forward and aft powered lifting rotors that straddle the airframe center of gravity such that the trim attitude and stability of the aircraft can be regulated by controlling the relative thrusts produced by each of the individual lifting rotors and the aircraft can be maneuvered about the established trim attitude by use of control surfaces located in the downwash of the lifting rotors.

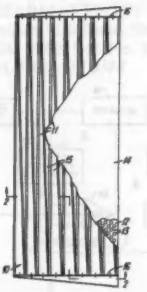
3,584,811
DEVICES OF PRODUCING AERODYNAMIC LIFT
Lionel Edward Leavy, Bramhall, and John Taylor, Hyde, both of, England, assignors to Hawker Siddeley Aviation Limited, Kingston-upon-Thames, Surrey, England
Filed Apr. 29, 1969, Ser. No. 820,259
Claims priority, application Great Britain, Apr. 30, 1968, 20512/68
Int. Cl. B64c *3/38*
U.S. Cl. 244—42 **4 Claims**

An aerodynamic lift-producing body for an aircraft, in the form of a blown pole, in which air can be blown selectively in



either circumferential direction over the outer surface of the pole, or in both directions simultaneously.

3,584,812
AIRCRAFT LIFTING SURFACES
Maurice Joseph Brenman, Bramhall, and Alfred Holt, Alkrington, Manchester, both of, England, assignors to Hawker Siddeley Aviation Limited, Kingston-upon-Thames, Surrey, England
Filed Nov. 4, 1968, Ser. No. 783,160
Claims priority, application Great Britain, Nov. 6, 1967, 50387/67
Int. Cl. B64c *21/06*
U.S. Cl. 244—41 **5 Claims**

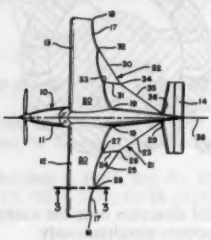


An air craft wing surface structure, adapted for laminar flow control, wherein the normal wing surface has placed externally upon it a lattice of ribs covered by an outer elastic porous sheet, the spaces between the ribs constituting channels to which suction is applied so as to draw air in through the porous sheet. A supporting layer of impervious material, with perforations, is interposed between the porous sheet and the lattice. To prevent the pores of the outer sheet from becoming clogged air can be alternately sucked in and blown out through it.

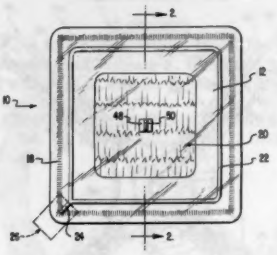
3,584,813
AIRFOIL BRIDLE APPARATUS
Thomas E. Sweeney, 61 Overbrook Drive, Princeton, N.J.; Robert A. Ormiston, 151 Calderon Ave. Apt. #112, Mountain View, Calif., and Walter Barry Nixon, 30 Merritt Drive, Trenton, N.J.
Filed June 26, 1968, Ser. No. 741,826
Int. Cl. B64c *3/44, 1/26*
U.S. Cl. 244—44 **6 Claims**

The present invention relates to a bridle assembly for use with a semirigid airfoil supported by an aircraft fuselage. The airfoil includes a spar defining a rigid leading edge, a cable defining a trailing edge, and flexible material interconnecting the spar and cable and defining a spanwise camber distribution. The bridle assembly includes at least one bridle cable

secured to the airfoil trailing edge cable, with the assembly being secured in tension to the fuselage, to create tension in the airfoil flexible material and retard changes in its camber distribution.



provided in the chamber surrounding the parachute and when the fuze is detonated, it burns through at least one of the plastic sheets to permit the parachute to be deployed from the package.

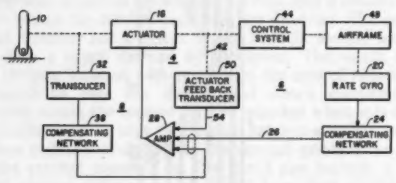


3,584,814

STABILITY AND CONTROL AUGMENTATION SYSTEM

Milford R. Murphy, Arlington, Tex., assignor to Bell Aerospace Corporation, Hurst, Tex.

Filed July 18, 1967, Ser. No. 654,187
Int. Cl. B64c *13/18*
U.S. Cl. 244—77 **16 Claims**



A stability and control augmentation system for a craft wherein a stabilizing signal is generated in response to external disturbances to activate a high gain stability feedback loop to introduce controlled angular rate. An operator control input activates both the stability feedback loop circuit and a control feedforward loop circuit to change the reference point for the feedback loop without altering the gain thereof. The high gain of the feedback loop dominates the response characteristics of the craft and provides effectively constant response characteristics through the operational envelope. The control feedforward loop circuit alters the reference point for feedback loop circuit so that the mechanical control input may be introduced to provide the desired control response.

3,584,815

METHOD AND MEANS FOR OPENING VACUUMIZED PARACHUTE PACKAGE

Fred B. Stencel, Asheville, N.C., assignor to Stencel Aero Engineering Corporation, Arden, N.C.

Filed June 25, 1969, Ser. No. 837,009
Int. Cl. B64d *17/52*
U.S. Cl. 244—149 **5 Claims**

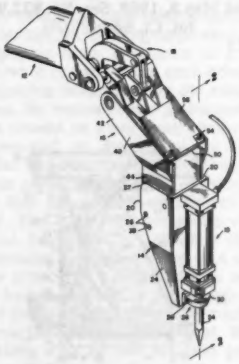
A parachute is packaged in a sealed chamber between a pair of peripherally sealed plastic sheets and the chamber is evacuated or vacuumized. An elongated pyrotechnic fuze is provided in the chamber surrounding the parachute and when the fuze is detonated, it burns through at least one of the plastic sheets to permit the parachute to be deployed from the package.

3,584,816

TOOL MOUNTING APPARATUS

Paul A. Salkeld, 1930-H Marine St., Portage, Ind.

Filed Feb. 24, 1970, Ser. No. 13,716
Int. Cl. E21c *5/00*
U.S. Cl. 248—16 **9 Claims**



A mounting device having a rigid frame and a stabilizer for carrying a tool in an operable position, and which may be carried by a boom, or by an adapter member which is carried by a boom. Adapter members are provided which may be carried by various types of booms. The mounting device and the adapters are constructed so that the mounting device may be used with all of the adapters.

3,584,817

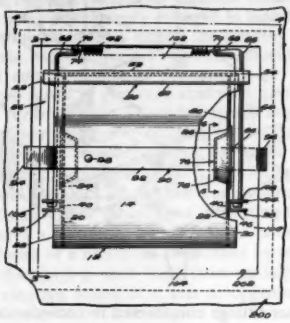
PAPER ROLL HOLDER AND DISPENSING DEVICE

Henry Bolger, Portland, Oreg., assignor to Reuben Schanaman and Maria Schanaman, both of Portland, Oreg., a part interest

Filed Apr. 17, 1969, Ser. No. 816,992
Int. Cl. A47k *10/22*; B65h *19/00*
U.S. Cl. 242—55.53 **5 Claims**

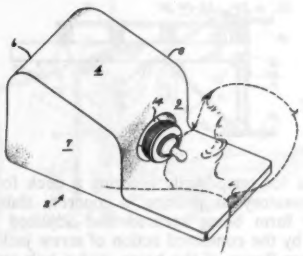
A wall mounted device including a hollow cylindrical shell having an open side with a facing flange contiguous thereto, a clamp arm on each opposed end of the shell cooperating with the flange to fixedly secure the device on the wall, the

device including a pair of opposed end walls, each of which receives a reciprocable hub for insertion in, respectively, the



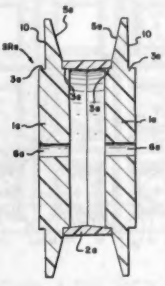
opposed ends of a roll of paper, and means constantly biasing the hubs for movement towards one another.

3,584,818
BABY BOTTLE HOLDER
Pansy E. Essman, 2207 Cunningham Ave., San Jose, Calif.
Filed Apr. 18, 1969, Ser. No. 817,387
Int. Cl. A47d *15/00*
U.S. Cl. 248—105 **1 Claim**



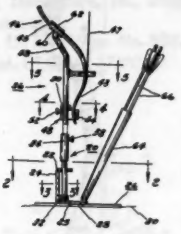
Presented is a baby bottle holder formed from a block of polyurethane foam-type material which simultaneously retains the bottle in position for nursing a baby and thermally insulates the bottle to maintain the milk or other food product contained with the bottle at a relatively constant temperature.

3,584,819
STORAGE REEL
Donald Powell Brough, Carlisle, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed May 23, 1969, Ser. No. 827,251
Int. Cl. B65h *75/14*
U.S. Cl. 242—118.61 **2 Claims**



A storage reel is made from a suitable molded foam material and it comprises a cylindrical core and end plates having shoulders on each side that are frictionally positioned within ends of the core. One side of the end plates has a beveled surface while the other side is provided with a straight surface.

3,584,820
ARCHERY BOW STAND
John A. Butcher, Sr., 109 West Exchange, Spring Lane, Mich.
Filed Jan. 31, 1969, Ser. No. 795,507
Int. Cl. A45f *3/44*; **F41b** *5/00*; **F41c** *29/00*
U.S. Cl. 248—122 **16 Claims**



A support or rest for an archery bow or a rifle, which comprises a universal stand or base having interchangeable standards to support a bow or a rifle in near ready position; the stand for a bow is equipped to mount a quiver so as to have arrows at disposal for the use of the device by an archer.

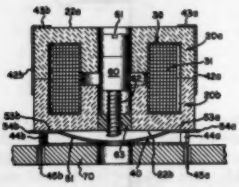
3,584,821
FIREARM SUPPORT
George T. Glebe, 785 Fetters Mill Road, Bryn Athyn, Pa.
Filed June 24, 1969, Ser. No. 835,950
Int. Cl. A45f *3/44*
U.S. Cl. 248—156 **4 Claims**

Firearm support for steadying a firearm during field and target shooting. Features include a pointed shaft having a firearm support member slidably mounted thereon. The latter has a firearm support surface and can be swung from a position in which the support surface is substantially at a right angle to the shaft to a raised position. Friction devices on the support member grip the shaft when the support surface is at the right angled position to prevent movement of the support member axially of the shaft. Raising the support member disengages the friction means to permit axial movement of the support member along the shaft. Adjustable damping devices restrict axial movement on the shaft. A hand grip and a special locking device lock the support member in the raised position.

3,584,822
FLEXIBLE COLUMNS
John A. Oram, Osborne Cottage, Heath Road, Leighton Buzzard, Bedfordshire, England
Filed Feb. 6, 1969, Ser. No. 797,054
Claims priority, application Great Britain, Feb. 26, 1968, 9263/68
Int. Cl. F16m 13/00
U.S. Cl. 248—160 18 Claims

A flexible column suitable for supporting apparatus such as electric lamps has a series of ball-and-socket joints rigidly locked together by a tensioned cable, spring means being provided at the free end of the column to tension the cable, together with unlocking mechanism including a lever whereby the spring bias can be opposed to unlock the column.

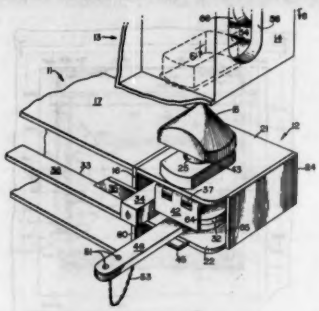
3,584,823
HOLDING DEVICE FOR A POT CORE
Donald K. Andrew, and Radford K. Owen, both of Lynchburg, Va., assignors to General Electric Company
Filed June 2, 1969, Ser. No. 829,659
Int. Cl. H01f 15/02
U.S. Cl. 248—314 12 Claims



A ferrite pot core is held in a device having two side members attached to and extending in the same parallel directions from a base. Flanges extend inwardly toward each other at the ends of the side members. A resilient support member is slideably positioned between the side members. The support member has seating surfaces near the side members, and is curved to form a surface for engaging the base near its center. When a core is mounted in the device, the core is held between the side members and under resilient pressure between the flanges and the seating surfaces.

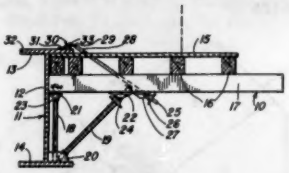
3,584,824
ADJUSTABLE TWIST LOCK
Roy C. Belcer, Opp, Ala., assignor to Dorsey Trailers, Incorporated, Elba, Ala.
Filed Aug. 2, 1968, Ser. No. 749,786
Int. Cl. B65d 45/00
U.S. Cl. 248—361 12 Claims

An adjustable twist lock for coupling a cargo container to a platform. The twist lock is adapted to secure containers



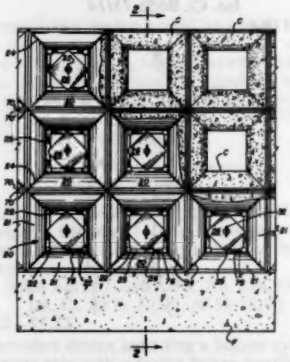
having corner fittings constructed in accordance with differing standards.

3,584,825
DECK FORM SUPPORT
Chester I. Williams, 1501 Madison Ave. S.E., Grand Rapids, Mich.
Filed Oct. 14, 1968, Ser. No. 767,160
Int. Cl. E04g 17/18
U.S. Cl. 249—23 2 Claims



A system for temporarily securing a deck form to an I-beam preparatory to pouring a concrete slab above the beam, the form being secured and adjusted to position preferably by the combined action of screw jacks supported on the lower flange of the beam, and a bolt traversing the form, at an incline, and connected to a terminal welded to a portion of the beam to be submerged in concrete.

3,584,826
CONCRETE WALL FORMING APPARATUS AND METHOD
Arvin F. Liester, 2515 LaSalle St., Colorado Springs, Colo.
Continuation-in-part of application Ser. No. 612,675, Jan. 30, 1967, now abandoned. This application May 5, 1969, Ser. No. 821,931
Int. Cl. E04g 11/10
U.S. Cl. 249—35 10 Claims



A plurality of self-contained, self-supporting form units for use in constructing a poured concrete wall simulating a block

laid wall. Each unit comprises two forms detachably connected together by removable connectors and separable by withdrawal in opposite directions; adjacent forms and superposed forms being interfittingly engaged to maintain them in concrete confining positions during the pouring and setting of the concrete, without the aid of panels, blocks or frames. The method comprises use of connectors for temporarily connecting two forms in rearward abutment to make a form unit, placing form units on a foundation into adjacent interfitting engagement in a row, pouring concrete around the units of the row, placing form units on top of the units of the first row to form a second row of units interfittingly engaging each other and the units of the first row, pouring concrete around the forms of the second row, repeating the cycle of operations until a complete wall has been poured, disconnecting the forms of a unit from each other by removing the connectors, disengaging each form from an adjacent form, and withdrawing the forms of a unit in opposite directions when the concrete has become set.

3,584,827

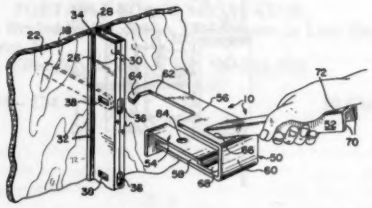
CONCRETE WALL FORM WITH WALER CLAMP ASSEMBLY

James C. Shoemaker, Hampshire, Ill., assignor to Symons Corporation, Des Plaines, Ill.

Continuation-in-part of application Ser. No. 808,503, Mar. 19, 1969. This application June 9, 1969, Ser. No. 831,383

Int. Cl. E04g *11/06*

U.S. Cl. 249—45 **7 Claims**



A three-part inseparable waler clamp assembly for convenient manual application to the meeting edges of a pair of steel-studded concrete wall form panels to effect clamping of such panels together, as well as to provide an anchor point for the adjacent end of any tie rod which may be confined between such edges.

3,584,828

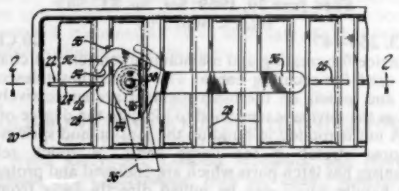
ICE TRAY WITH CAM ACTION HANDLE

Joe P. Pietrzak, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 14, 1969, Ser. No. 799,204

Int. Cl. B28b *7/10*

U.S. Cl. 249—72 **4 Claims**



In the preferred form, a grid for a freezing tray has a horizontally extending handle pivoted upon an upright pivot yoked to single or dual lower longitudinal walls. The handle is provided with a first cam surface engaging one face of an adjacent transverse wall which has an opening laterally of the engaging surfaces. The handle also has a cam arm diverging from the first cam surface extending through said opening for moving said transverse wall in the opposite direction. A torsion spring extending around the pivot pin has its opposite ends engaging the handle and yoke for returning the handle to a position parallel to the longitudinal walls and for moving the cam arm through said opening.

3,584,829

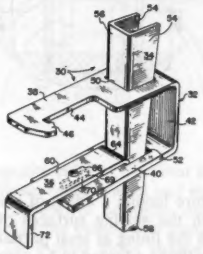
SELF-CONTAINED WALER CLAMP ASSEMBLY FOR CONCRETE WALL FORM

James C. Shoemaker, Hampshire, Ill., assignor to Symons Corporation, Des Plaines, Ill.

Filed Mar. 19, 1969, Ser. No. 808,503

Int. Cl. E04g *17/00*

U.S. Cl. 249—219 **11 Claims**



An inseparable waler clamp assembly for convenient manual application to the protruding end of a tie rod for securely clamping either a single or a dual waler hard against the outer side of a series of upstanding and edge-to-edge wall form panels. In one form of the waler clamp assembly, the design thereof is such that it will accommodate attachment to a flat tie rod.

3,584,830

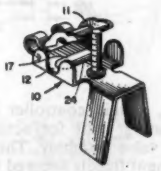
CLAMP FOR RESILIENT TUBING

Wilbur R. Koehn, 20 Shorewood Drive, Port Washington, N.Y.

Filed Oct. 18, 1968, Ser. No. 768,743

Int. Cl. F16k *7/06*

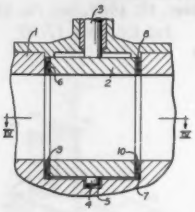
U.S. Cl. 251—8 **20 Claims**



A screw clamp for flexible and resilient tubing, particularly tubing as used in the administration of parenteral fluids. The clamp includes a pair of rigid jaws mounted for movement towards and away from each other, one of the jaws having a substantially semicylindrical channel and the other jaw having an elongated and arcuate projection of generally semicircular cross section which is smaller in both longitudinal and transverse dimensions than the channel. A knob carried by a threaded post secured to one of the jaws may be rotated to force the jaws together for clamping and collapsing a tube of resilient plastic or other suitable material extending therebetween. In one form of the invention the rigid jaws are hingedly connected by a spring hinge, and a pair of arms ex-

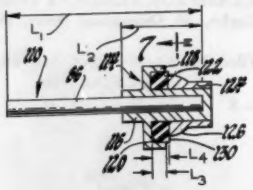
tend outwardly from the post-equipped jaw for facilitating one-handed operation of the clamp.

3,584,831
COCK WITH ELASTIC LINING
Carl Heinz Hafele, Monchengladbach, Germany, assignor to Rheinische Armaturen-u, Maschinenfabrik Albert Sempell, Lurriper Strasse, Monchengladbach, Germany
Filed Feb. 24, 1969, Ser. No. 801,605
Claims priority, application Germany, Feb. 24, 1968, P 16 75 517.2
Int. Cl. F16k *5/18*
U.S. Cl. 251—172 **7 Claims**



A valve structure having a lining of elastically deformable material between the sealing surfaces of the plug and the housing in which the lining at least partially defines chamber means within the lining adapted to be conveyed with pressure fluid while the end faces of said lining are supported by fixedly arranged supporting walls.

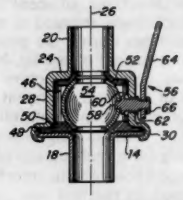
3,584,832
TILT CORE VALVE
George W. Jackson, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed June 23, 1969, Ser. No. 835,481
Int. Cl. F16k *1/16*
U.S. Cl. 251—303 **1 Claim**



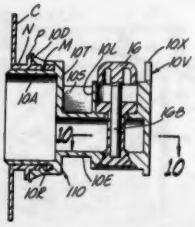
In preferred form, a fluid controller having a body that supports a reciprocating shaft for actuating an elongated operating stem of a valve assembly. The valve assembly includes a valving element fixedly secured to the stem which is maintained in biased sealed relationship with a valve seat by spring means when the valve is closed. The reciprocating shaft has means thereon engageable with the stem to angularly tilt the stem to open the valve in response to the angular relationship between the operating shaft and the stem and independently of the distance between lineally spaced points on the stem and the valve seat of the assembly.

3,584,833
SHEET METAL TWO-PART VALVE HOUSING
Wilfred Joseph Grenier, Rutland, Mass., assignor to General Industries, Incorporated, Worcester, Mass.
Filed June 20, 1969, Ser. No. 835,097
Int. Cl. F16k *5/06*
U.S. Cl. 251—315 **1 Claim**

A two-part, sheet metal valve housing in which the metal grain is continuous and is aligned with the contours of the parts and an apparatus and process for making it.



3,584,834
MANUALLY OPERABLE ELASTIC SPRING AND VALVE MEMBER
Otto S. Reid, and Carl E. Fram, both of c/o Reid Valve Company Inc., 138 East Maple Ave., Monrovia, Calif.
Continuation-in-part of application Ser. No. 412,191, Nov. 18, 1964, now abandoned. This application Sept. 21, 1967, Ser. No. 687,937
Int. Cl. F16k *7/00*
U.S. Cl. 251—321 **2 Claims**



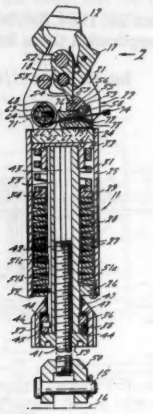
A valve structure in which a manually operable elastic member serves both as a valve-closing element and a spring element to maintain itself closed, this member having two flanged portions interconnected by a cylindrical portion, such flanged portions being in engagement with two internally shouldered portions of a valve casing and with such cylindrical portion being in a cylindrical casing portion which is in communication with inlet fluid pressure such that equal and opposite forces are developed on the flanged portions by said inlet fluid pressure.

3,584,835
TENSIONING DEVICE
Erving F. White; Gordon W. Goodwin, and Arnold E. Roberts, all of Jackson, Mich., assignors to Aeroquip Corporation, Jackson, Mich.
Filed June 30, 1969, Ser. No. 837,583
Int. Cl. B66f *3/08*
U.S. Cl. 254—67 **20 Claims**

A device for creating and maintaining tension in a chain or cable used for securing cargo. The device has telescoping parts, and indicia on the inner element are successively exposed as the device is tensioned to indicate the degree of tension. A nut is rotated to build up the tension and springs permit some stretch if the cargo shifts. A quick release mechanism has latch parts which are enclosed and protected, and a handle which can be pulled directly away from the device for tension release. The release handle operates through a lanyard on a reel so that the hand of the operator will be a safe distance away from the device when tension is released. To relatch the device for another tensioning operation, it is merely necessary to return the chain or cable retaining member to its latched position.

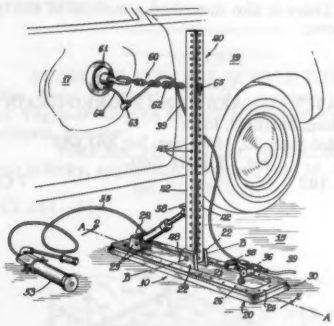
In one form of the tensioning device, frustoconical springs

are used in series with a lighter coil spring which is deflected when the tensioning nut is originally taken up. In another



form, used for lighter loads, the frustoconical springs along are used.

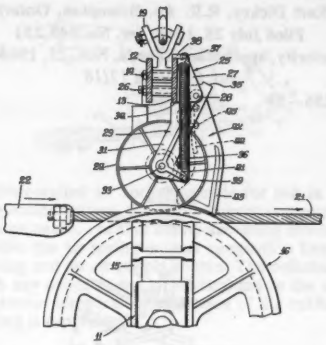
3,584,836
PORTABLE FORCE APPLICATOR
Edward F. Brubaker, Sr., Salem, Ill., assignor to Lear Siegler Inc., Salem, Ill.
Filed July 17, 1969, Ser. No. 842,600
Int. Cl. B66f *3/00*
U.S. Cl. 254—124 **10 Claims**



A portable force applicator having selectively operable vacuum anchorage for a power actuated mast and a hydraulic ram for pivotally actuating the mast. A power-actuated vacuum cup for attachment to an object upon which force is to be exerted, is connected by an articulate chain at selected adjustable positions along the mast.

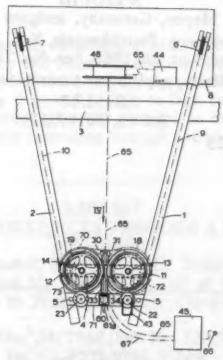
3,584,837
HOLD-DOWN DEVICE FOR MULTICONDUCTOR STRINGING BLOCKS
Frank Ward Reilly, Sr., Lookout Mountain, and Hoyt W. Bozeman, Jr., Chattanooga, both of, Tenn., assignors to Sherman & Reilly, Inc., Chattanooga, Tenn.
Filed Sept. 4, 1969, Ser. No. 855,264
Int. Cl. E21c *29/16*
U.S. Cl. 254—134.3PA **10 Claims**

Holddown device for attachment to multiconductor stringing blocks comprising mounting bracket attachable to upper part of bundle block frame, auxiliary bracket pivoted on mounting bracket and rotatably supporting holddown roller in operative position in throat of block to limit upward movement of pulling line and swingable upwardly to carry roller to inoperative position to provide clearance for running board through the block, spring means interconnecting the mounting and auxiliary brackets to apply a constraining force along



a line shiftable to opposite sides of the pivot therebetween to resiliently urge holddown roller toward and maintain same in both operative and inoperative positions, and guide means for preventing contact of the pulling line simultaneously with its guide groove in the bundle block sheave and the holddown roller when latter is in operative position.

3,584,838
ROOF HOISTS
Herbert C. Tampin, Gravesend, Kent, England, assignor to Electrohoists Patents Limited, Gravesend, Kent, England
Filed Feb. 17, 1969, Ser. No. 799,859
Claims priority, application Great Britain, Feb. 20, 1968, 8241/68
Int. Cl. B66d *1/26*
U.S. Cl. 254—183 **10 Claims**



A portable hoist capable of being moved from location to location with but little dismantling and comprising a simple frame with two cable drums geared together, two electric motors allocated respectively to the cable drums for winding and unwinding the cables, and two brake mechanisms, one for each cable drum, arranged automatically to stop the drums when the power supply to the motors is interrupted. There are two detachable jibs for carrying the cables over, for example, the edge of a tall building. There is also a portable control box arranged to be connected to any convenient source of electrical power and containing the switchgear necessary for the motors and brake mechanisms. Remote

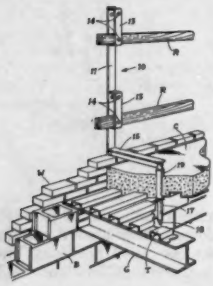
control may be effected by an electrical controller manually actuable in a cradle supported by the hoist. The hoist may be divided into two units, each with one drum, one motor, one brake mechanism and one jib.

3,584,839

CONSTRUCTION SAFETY FENCE POST

Edward Earl Dickey, R.R. #6, Brampton, Ontario, Canada

Filed July 28, 1969, Ser. No. 845,231
Claims priority, application Canada, Nov. 25, 1968, 036,041
Int. Cl. E04h 17/18
U.S. Cl. 256—59 6 Claims



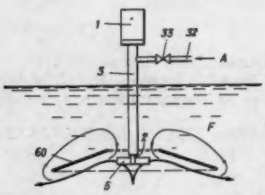
A fencepost for supporting a guardrail around the top of a building under construction, the post having a support arm and a downwardly directly spike which may be forced through the metal roof decking, and a disposable sleeve around the spike means which remains captive in the poured concrete of the building structure while permitting the spike and fencepost to be removed for use on a higher floor.

3,584,840

MIXING DEVICE FOR INTRODUCING ADDITIVES INTO A LIQUID

Hubert Fuchs, Mayen, Germany, assignor to The De Laval Separator Company, Poughkeepsie, N.Y.

Filed Sept. 26, 1968, Ser. No. 762,741
Claims priority, application Austria, Sept. 26, 1967, A8752/67
Int. Cl. B01f 7/22
U.S. Cl. 259—23 22 Claims



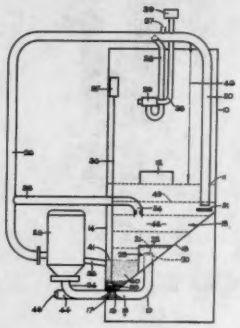
A mixing device for introducing additives, particularly gaseous additives into a liquid to produce mixtures, solutions, emulsions or suspensions, comprising a rotatable drive shaft immersible in the liquid, a rotatable mixing propeller driven by the drive shaft, a bore in the drive shaft and/or a separate carrier tube or tubes concentrically surrounding the drive shaft, through which the additives can be delivered and a stationary guide ring concentrically surrounding the mixing propeller at a radial distance from its outer edge.

3,584,841

SLURRY CIRCULATION APPARATUS AND METHOD

Anthony Gerard Field, Redditch, England, assignor to Abrasive Developments Limited, Henley-in-Arden, Solihull, England

Filed Oct. 21, 1968, Ser. No. 769,047
Claims priority, application Great Britain, Oct. 24, 1967, 48,171/67
Int. Cl. B01f 5/10
U.S. Cl. 259—95 8 Claims



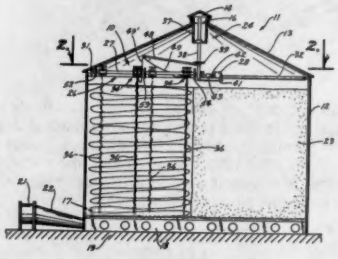
The disclosure describes apparatus for circulating slurry from a tank in which the solid particles of the slurry settle, the apparatus comprising a passage which opens at one end into the tank above the level of the particles so that liquid can enter the passage, the other end of the passage being connected to a pump and an outlet aperture being provided in the tank to lead particles into the passage intermediate the ends thereof. There is also described a method of slurry circulation as above.

3,584,842

APPARATUS FOR AERATING STORED GRAIN

Eugene G. Sukup, Sheffield, Iowa

Filed Sept. 29, 1969, Ser. No. 861,685
Int. Cl. B01f 7/00
U.S. Cl. 259—102 7 Claims



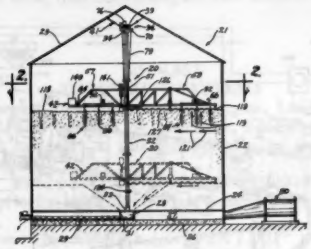
An apparatus for aerating grain stored in an enclosure by mechanically moving a stirring apparatus therethrough. The apparatus comprises a vertically disposed element which is rotatably mounted on a carriage movable itself back and forth on a flightless, smooth tubular member which is rotated about its own axis as it is moved over the stored grain. The tubular member is supported above the grain by means connected to the enclosure and a motor is provided for both rotating and moving the tubular member.

3,584,843

APPARATUS FOR STIRRING GRAIN IN A STORAGE BIN

Claire W. Koobs, R.F.D. #2, Box 88, and Gerald A. Koobs, 1005 12th St., both of Grundy Center, Iowa

Filed May 22, 1969, Ser. No. 826,808
Int. Cl. B01f 7/00; B29b 1/10
U.S. Cl. 259—104 6 Claims



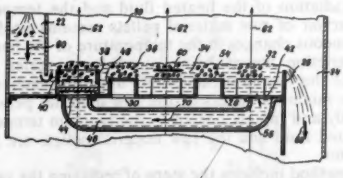
The grain-stirring apparatus has a floor-supported center column on which a horizontal frame is mounted for horizontal rotational movement and vertical movement. The frame carries longitudinally spaced stirring bits or augers each of which is adjustable movable from a vertical position to a horizontal position pointing in the direction of frame rotation. The bits mounted on the frame to one side of the center column extend over the inner half radius of the bin and the bits on the opposite side of the center column extend over the outer half radius of the bin. The bits or augers, when inclined to the vertical, function to stir the grain and horizontally rotate the frame. To unload the grain from the bin, a horizontal sweep auger extended longitudinally of and in a trailing relation with one end section of the frame is operated to direct the grain centrally of the bin for removal. During a bin-unloading operation the stirring augers are in their horizontal positions and the frame is horizontally rotated by the sweep auger.

3,584,844

BUBBLE PLATES FOR BUBBLE TOWERS

Agoston Papp, Budapest, Hungary, assignor to Chemokomplex Vegyipari Gep-Es Berendezes Export-Import Vallalat, Budapest, Hungary

Filed Jan. 21, 1969, Ser. No. 792,689
Claims priority, application Hungary, July 25, 1968, PA-974
Int. Cl. B01d 3/16
U.S. Cl. 261—114 10 Claims



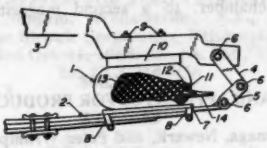
Thorough backmixing on a bubble plate and thereby improved plate efficiency is obtained by recirculating the liquid on a bubble plate in a vertical plane. For this purpose the air lift or mammoth pump principle is employed by means of which the liquid on the plate is enriched with gas traversing the plate at the far side thereof as regards its overflow weir which entails a local decrease of the specific weight of the liquid. Channels below the plate connect places in the neighborhood of the overflow weir with the places of locally decreased specific weight of the liquid. Consequently, the liquid of higher specific weight flows from the neighborhood of the overflow weir beneath the plate back to the far side of the plate where it ascends back into the main flow of the liquid which means a constant recirculation of the liquid around the plate in a vertical plane.

3,584,845

AIR SPRING

Alfred E. Hoffman, Saddle River, N.J., assignor to Universal Oil Products Co., Des Plaines, Ill.

Filed Jan. 15, 1969, Ser. No. 791,337
Int. Cl. F16f 5/00
U.S. Cl. 267—120 7 Claims



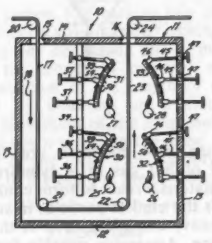
In a rubber-walled air spring suitable for use in a vehicle spring suspension system, the improvement comprising a cellulose sponge, mesh, or other ozone-accepting structure positioned within the air spring or in a connection line between the air spring and an air supply source. The cellulose rapidly reacts with any ozone in the air transmitted to the air spring, whereby interior chemical deterioration of the rubber wall of the air spring is suppressed.

3,584,846

HEATING APPARATUS FOR ELONGATE MATERIAL

Lyle E. McCoy, 533 North Whitehall Road, Norristown, Pa.

Filed Nov. 14, 1969, Ser. No. 876,832
Int. Cl. F27b 9/28
U.S. Cl. 263—3 7 Claims



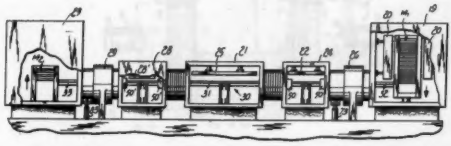
A heating apparatus including a panel for receiving heat from a heat source and radiating received heat to a path of movement of material to be heated, the panel including strips of fibrous matting disposed in face-to-face relation with the fibers of the matting generally parallel to the faces of the strips, and tie means extending through and securing together the strips.

3,584,847

ADVANCING WORKPIECES THROUGH A SPUTTERING CHAMBER

Charles S. Hammond, Jr.; Joseph C. Tribble; Robert M. Tribble, and Paul M. Johnson, Jr., all of Winston-Salem, N.C., assignors to Western Electric Company, Inc., New York, N.Y.

Filed May 31, 1968, Ser. No. 733,553
Int. Cl. F27b 9/02, 9/24
U.S. Cl. 263—6 18 Claims



An apparatus for depositing a thin film of tantalum to workpieces includes a sputtering chamber and entrance and

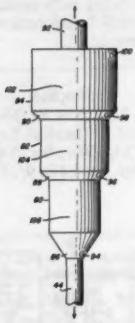
exit chambers located at opposite ends of and communicating with the sputtering chamber. Sealing devices are provided for isolating the sputtering chamber from the entrance and exit chambers. A reciprocating conveyor having a central conveyor section located within the sputtering chamber, and first and second conveyor sections, located in the entrance and exit chambers, respectively, and which sections may all be connected together, is provided for advancing workpieces from a first magazine in the entrance chamber, through the sputtering chamber, to a second magazine in the exit chamber.

3,584,848

METHOD AND APPARATUS FOR PRODUCING CEMENT CLINKER

Kazuo Kiyonaga, Newark, and Peter Wrampe, Edison, both of, N.J., assignors to Union Carbide Corp., New York, N.Y.

Filed May 21, 1969, Ser. No. 826,392
Int. Cl. F26b *17/00*; F27b *15/00*
U.S. Cl. 263—21 **6 Claims**



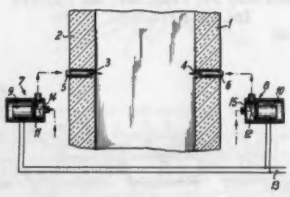
Cement-forming raw materials are introduced into a swirling stream of hot gas in a cylindrical reaction zone where the raw materials react to form clinkers and where the gas stream holds the clinker particles in suspension until the particles grow heavy enough to drop to the lower portion of the reaction zone. Apparatus suitable for carrying out the process is also described.

3,584,849

EQUIPMENT FOR FIRING CERAMIC AND OTHER KILNS OR FURNACES

Gottfried Cremer, Steyrer Weg 9, Junkersdorf; Heinz Behrens, Am Weidenpesch 19, Junkersdorf, and Peter Schwamborn, Irrenloher Damm, Schwarzenfeld, all of, Germany

Filed July 22, 1969, Ser. No. 843,697
Claims priority, application Austria, July 24, 1968, 7184/68
Int. Cl. F27b *9/00*
U.S. Cl. 263—28 **4 Claims**



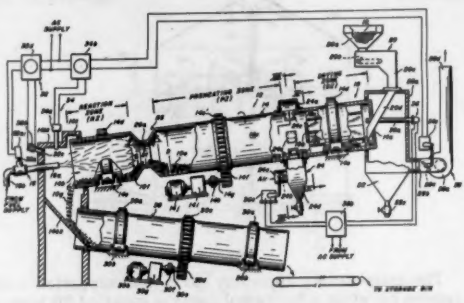
A kiln or the like is heated by two oppositely placed burners whose supply with air and/or fuel is regulated by two valves which are offset in phase, e.g. by 180°.

3,584,850

ROTARY KILN FOR SHOCK SINTERING

William W. Brandvold, Gary, Ind., and Stewart W. Tresouthick, Allison Park, Pa., assignors to United States Steel Corporation

Filed July 2, 1969, Ser. No. 838,560
Int. Cl. F27b *7/00*
U.S. Cl. 263—32 **20 Claims**



This invention relates to a method of and apparatus for pyroprocessing raw material having a reaction temperature and containing moisture into sinter.

The apparatus has a rotary kiln adapted to receive the raw material pellets at one end of the rotary kiln and to move the raw material pellets along a path of movement in the rotary kiln to the other end of the rotary kiln. Heating means are adjacent the other end of the rotary kiln for directing a heated fluid through the rotary kiln, the rotary kiln having a drying means adjacent the one end of the rotary kiln for heating the raw material pellets by the heated fluid to substantially remove the moisture in the raw material pellets. Cooling means communicate with the drying means for mixing a cooling fluid with the heated fluid to limit the temperature in the drying means below the temperature at which the raw material pellets explode due to rapid heating to a deleteriously high temperature. The rotary kiln has a preheating zone adjacent the drying means further along the path of movement for heating the raw material pellets to a temperature below the reaction temperature. The rotary kiln has a reaction zone adjacent the other end of the rotary kiln for heating the raw material pellets above the reaction temperature to pyroprocess the raw material pellets into the sinter. Restriction means are between the preheating zone and the reaction zone for damming a reservoir of the raw material pellets adjacent the restriction means so that the reservoir of the raw material pellets is protected from the direct radiation of the heated fluid and the temperature of the reservoir of raw material pellets remains unaffected by instantaneous changes in the temperature of the heated fluid, the restriction means being operable to meter minimum layers of the raw material pellets into the reaction zone so that the minimum layers of the raw material pellets are individually and rapidly heated to the reaction temperature by the heated fluid and the raw material pellets are converted into sinter.

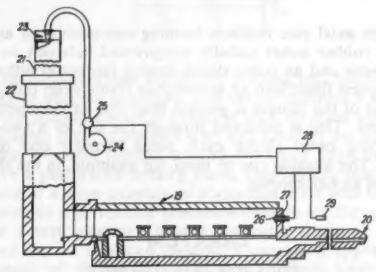
The method includes the steps of receiving the raw material pellets at one end of a rotary kiln and moving the raw material pellets along a path of movement in the rotary kiln to the other end of the rotary kiln; directing a heated fluid through the rotary kiln; heating the raw material pellets by the heated fluid adjacent the one end of the rotary kiln to substantially remove the moisture in the raw material pellets; mixing a cooling fluid with the heated fluid to limit the temperature (during the removal of the moisture) below the temperature at which the raw material pellets explode due to rapid heating to a deleteriously high temperature; heating the raw material pellets in a preheating zone of the rotary kiln further along the path of movement to a temperature below the reaction temperature; damming a reservoir of the raw material pellets adjacent the preheating zone and further along the path of movement so that the reservoir of the raw material pellets is protected from the direct radiation of the

heated fluid and the temperature of the reservoir of the raw material pellets remains unaffected by instantaneous changes in the temperature of the heated fluid; metering minimum layers of the raw material pellets adjacent the preheating zone and further along the path of movement into a reaction zone of the rotary kiln adjacent the other end of the kiln; and heating raw material pellets individually and rapidly in the reaction zone of the rotary kiln to individually and rapidly heat the raw material pellets to the reaction temperature by the heated fluid, thus converting the raw material pellets into the sinter.

3,584,851
DAMPERING SYSTEMS

Clifford Inman, Penketh, near Warrington, Lancashire, and David George Cadwell, Skelmersdale, Lancashire, both of, England, assignors to Pilkington Brothers Limited, Liverpool, England

Filed June 13, 1969, Ser. No. 833,010
Claims priority, application Great Britain, June 18, 1968, 29036/68
Int. Cl. F27b *3/02*; **F23l** *11/02*
U.S. Cl. 263—40 **11 Claims**

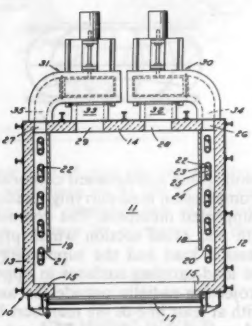


A chimney-dampering system for regulating the pressure in a furnace includes a circumferential lip in the chimney for deflecting inwardly gas rising up the chimney adjacent its wall, and a nozzle pointing centrally downwardly to direct dampering air downwardly through the aperture defined by the lip.

3,584,852
HEAT-TREAT FURNACE

Claude H. Leland, Grosse Pointe Woods, Mich., assignor to Super Steel Treating Co., Warren, Mich.

Filed Aug. 22, 1969, Ser. No. 852,393
Int. Cl. F27b *5/00*
U.S. Cl. 263—40R **3 Claims**

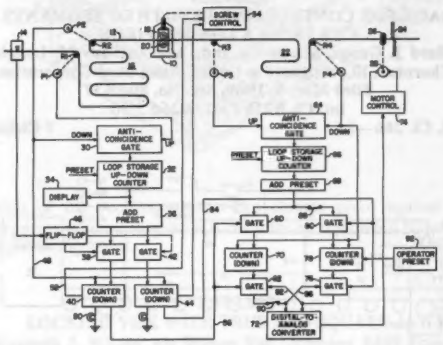


A heat-treat furnace having at least one radiator channel along a wall having heat radiators therein with a blower exhausting air into the channel horizontally at one end of the channel and with the channel exhausting air horizontally into the furnace interior at the other end of the channel; the blower suction side drawing air horizontally from the furnace interior so that heated air is recirculated in the furnace interior horizontally to effect homogenous heating of metal items in the furnace from top-to-bottom; side-to-side, and end-to-end by air recirculation in horizontal travel to oppose and reduce gravitational and density influences toward stratification.

3,584,853
TRACKING SYSTEM FOR STRIP PROCESSING LINES

William A. Munson, Williamsville, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 11, 1968, Ser. No. 766,785
Int. Cl. C21d *9/56*
U.S. Cl. 266—3 **6 Claims**

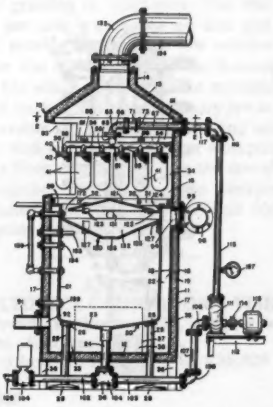


Described is a system for tracking one or more welds or other specific points on strip material passing through a continuous processing line containing one or more loop storage areas in which the length of material may increase or decrease. Determination of the length of material in loop storage is made by counting up a storage counter in reference to the movement of the strip material introduced into the loop and down counting the same counter for strip material paid out of the loop. This quantity is then used to track the position of the point in the processing line.

3,584,854
METHOD AND APPARATUS FOR SEPARATING COMPONENTS FROM COMMINUTED ALLOYS

Asparough Trendov, 4257 Wooddale Ave. S., Minneapolis, Minn.

Filed Mar. 3, 1969, Ser. No. 803,741
Int. Cl. C22b *9/02*
U.S. Cl. 266—12 **11 Claims**



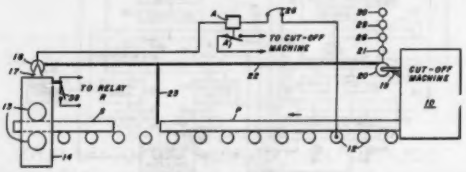
Apparatus for separating components from comminuted alloys having a housing with a kettle therein spaced from the

housing and having a flange engaging the inner wall of the housing and dividing the same into upper and lower compartments. The alloy to be treated is introduced into the kettle in comminuted form together with a leaching solution and heated gas introduced in the lower compartment to bring about reaction between the alloy and leaching solution. The resultant liquid and precipitate are pumped into filters in the upper chamber from which the liquid is drained back over heating baffles into the kettle. Vaporized liquid is removed from the apparatus and condensed. The filters are mounted on a carriage slidable along rails in the upper chamber and removed through an opening in the housing, said opening being closed when the apparatus is in operation.

3,584,855
GAGE FOR CONTROLLING LENGTH OF SEGMENTS CUT FROM A LONGER PIECE

Willard J. Ganga, Merillville, Ind., and Anthony M. Longhi, Thornton, Ill., assignors to United States Steel Corporation

Filed Mar. 5, 1969, Ser. No. 804,637
Int. Cl. B23k 7/02; B26d 5/38
U.S. Cl. 266—23 **7 Claims**

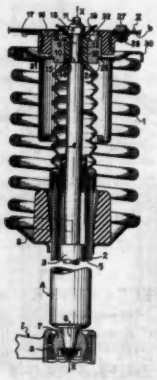


A gage for controlling the length of segments cut from a longer piece, particularly a continuously cast steel product. The gage includes a spring-loaded drum, a cable wound around the drum and extending over the product to the cutoff machine, and a rod freely suspended from the cable into the path of the piece. When the leading end of the piece abuts the rod, the cutoff machine starts and travels with the piece as it makes a cut, while the cable winds on the drum.

3,584,856
VEHICLE SUSPENSION DEVICE

Jacques A. Desbois, Montbeliard, France, assignor to Automobiles Peugeot, Paris, France and Regie Nationale Des Usines Renault, Billancourt, France

Filed Jan. 8, 1969, Ser. No. 789,817
Claims priority, application France, Jan. 9, 1968, 135,280
Int. Cl. B60g 11/56
U.S. Cl. 267—34 **5 Claims**

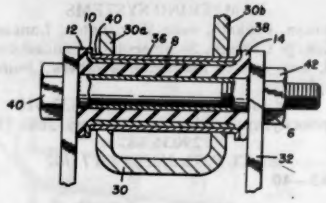


Vehicle suspension device in which the spring and damper are connected to the body of the vehicle by different elastically yieldable connecting means. The arrangement is such that the damper is connected to the body less rigidly than the spring.

3,584,857
FLANGED-END BUSHING

Gary L. Hipsher, Logansport, Ind., assignor to The General Tire & Rubber Company

Filed May 26, 1969, Ser. No. 827,718
Int. Cl. F16f 1/38
U.S. Cl. 267—57.1 **8 Claims**



A high axial rate resilient bushing comprising an annular molded rubber insert radially compressed between an inner rigid sleeve and an outer sleeve having flanges at either end can be press fitted into an automobile frame even though the diameter of the flanges is greater than that of the opening in the frame. This is achieved through the use of a two-piece telescoping outer sleeve each piece forming one of said flanges. The bushing can be used, for example, in the shackle spring of an automobile.

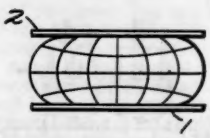
ERRATUM

For Class 267—120 see:
Patent No. 3,584,845

3,584,858
COMPRESSION SPRING

Merrill G. Beck, Erie, Pa., assignor to Lord Corporation, Erie, Pa.

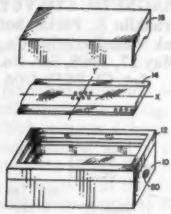
Continuation-in-part of application Ser. No. 511,896, Dec. 6, 1965, now abandoned, and a continuation-in-part of 619,462, Feb. 28, 1967, now Patent No. 3,461,816, and a continuation-in-part of 739,968, May 23, 1968, now Patent No. 3,456,961. This application Apr. 25, 1969, Ser. No. 819,332
Int. Cl. F16s 1/36
U.S. Cl. 267—153 **13 Claims**



A compression spring arrangement comprising a column of elastomer in compression load-carrying relation between supporting and supported members. The column has a relation between length and cross section which prevents buckling under compression load and the supporting and supported members have load-carrying surfaces in opposed relation to each other projecting radially outside the associated end of the column with at least one of the members being bonded to the associated end of the column. The ends of the column diverge outward from the load-carrying surfaces at an acute angle to define a central section between the ends of substantially greater cross-sectional area than the cross-sectional area of the ends in contact with said members at no load. Under compression load, the elastomer bulges or rolls outward into load contact with the load-carrying surfaces outside the bond and increases the load-carrying area of the

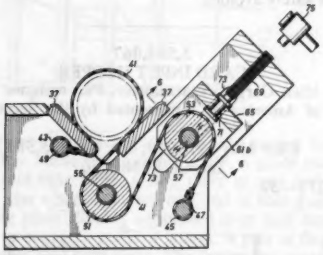
column presented to the associated load-carrying surfaces. The mounting is characterized by greater load-carrying ability and by a longer life than the same volume of elastomer in a column of the same height but of uniform cross-sectional area through.

3,584,859
VACUUM-OPERATED SPECIMEN-HOLDING DEVICE
Robert E. Siron, Huntsville, Ala.
Filed Jan. 3, 1969, Ser. No. 788,824
Int. Cl. B25b *11/00*
U.S. Cl. 269—21 **3 Claims**



A vacuum-operated device for holding test specimens for cutting or shaping purposes. The device includes a rectangular base portion having a chamber with an open upper side. An adapter plate is parallel with and fixed to the upper side and has a recess formed around the inner edge thereof to receive a perforated holding plate. The holding plate can be any one of a large quantity of plates that mate with the recess and provide a perforated geometric closure for the open side. When a test specimen having the same shape as the perforated closure is placed thereon, a vacuum is applied to the enclosure of the device and the resultant force on the specimen holds it in place.

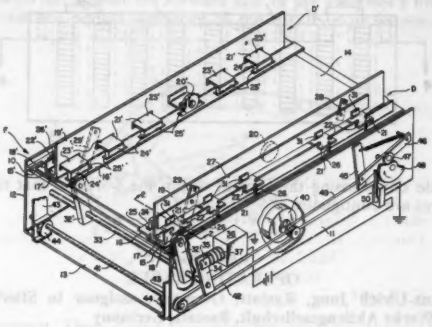
3,584,860
BELT PIPE VISE
James Edwin Ervin, 116 East Peach, Angleton, Tex.
Filed July 5, 1968, Ser. No. 742,750
Int. Cl. B25b *1/20*
U.S. Cl. 269—131 **3 Claims**



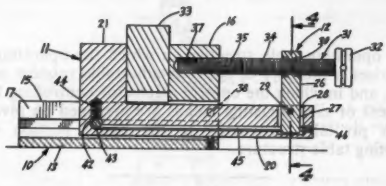
A flexible belt type of pipe vise for gripping plastic coated pipe or other workpiece so as not to damage or otherwise mar the surface. The clamping belt of the vise is adjustably mounted so as to vary its diameter by movement of an operating handle.

3,584,861
CLAMPING DEVICE
William A. MacDonald, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 21, 1969, Ser. No. 809,363
Int. Cl. B25b *5/04*
U.S. Cl. 269—154 **7 Claims**

A device is provided for clamping the side edges of a receiver to hold it in place while a flexible electrode or a flexible photoconductor is stripped therefrom after charging so that the electrostatic attraction between the member being stripped away and the receiver sheet will not disturb the position of the receiver sheet. The clamps pivot against the receiver tending to stretch it laterally on the platen to hold it tight thereagainst.



3,584,862
LOCKING VISE WITH TRUE AND SQUARE JAWS
Kenneth J. Wilson, c/o Wilson Toll Company 2439 Franklin Ave., St. St. Paul, Minn.
Continuation-in-part of application Ser. No. 849,033, Aug. 11, 1969. This application Oct. 17, 1969, Ser. No. 867,127
Int. Cl. B25b *1/02, 1/10*
U.S. Cl. 269—242 **9 Claims**



A locking distortion-free vise for holding a workpiece true and square for grinding or machining. The vise has a base and stationary jaw unit, a movable jaw unit and a force-applying unit for moving the movable jaw relative to the stationary jaw. The vise is unique in that the force-applying unit is carried on a bar which also carries the movable jaw. Force is applied to the back face of the stationary jaw is transmitted to draw the movable jaw toward the true and square clamping face of the stationary jaw to hold a workpiece true and square and free from distortion. When the movable and stationary jaws together firmly clamp the workpiece locking means are actuated which lock the jaws and which prevent the jaws from going out of true.

3,584,863
MULTIPIECE GRIPPER FOR A VISE
Edward L. Ryswick, Rochester, N.Y., assignor to Varispace Industries, Inc., East Rochester, N.Y.
Filed June 20, 1969, Ser. No. 835,028
Int. Cl. B25b *1/24*
U.S. Cl. 269—265 **12 Claims**

A plurality of uniform pieces are gripped between the jaws of a vise by the exposed sides of individual turns of a coil spring disposed between the vise jaws. Preferably, several springs are housed in bores in a block with the turns of the

spring extending from the face of the block for gripping pieces. The block is supported on a vise jaw and includes a

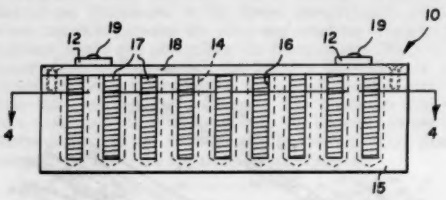
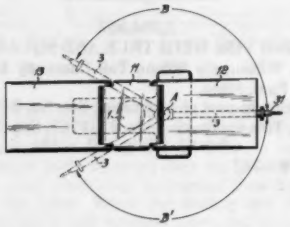


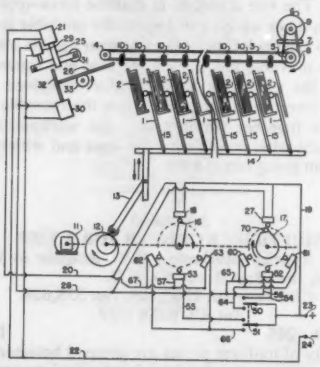
plate compressing the springs within the bores so that their turns are contiguous.

3,584,864
OPERATING TABLE
Hans-Ulrich Jung, Rastatt, Germany, assignor to Stierlen-Werke Aktiengesellschaft, Rastatt, Germany
Filed May 27, 1968, Ser. No. 732,276
Claims priority, application Germany, May 27, 1967, P 15 66 468.3
Int. Cl. A61g *13/00*
U.S. Cl. 269—325 **7 Claims**



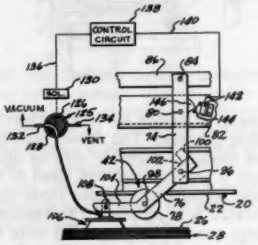
An operating table structure in which the operating table comprises a plurality of sections adjustable relative to each other, and in which the control means for controlling the adjustment of said adjusting means are arranged on pivot arm means pivotally connected to the upper portion of the operating table structure.

3,584,865
COLLATING MACHINE ATTACHMENT
Frank J. Mignano, 293 8th St., Brooklyn, N.Y.
Filed June 12, 1969, Ser. No. 832,635
Int. Cl. B65h *39/02*
U.S. Cl. 270—53 **4 Claims**



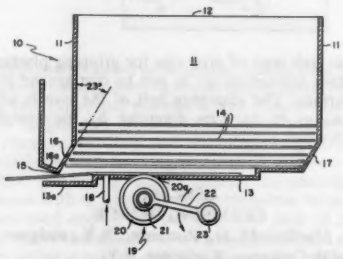
In a collating machine having paper bins with papers therein to be collated, a moving belt and roller system disposed over the bins, paper ejection arms simultaneously moving the uppermost sheet in each bin into the belt and roller system to be delivered into a delivery tray at the end of the system, first switches, a stitcher, ejection means associated with the tray, and rotating cams operating said ejection arms and contacting said first switches to activate the stitcher and the tray ejection means, one rotation of the cams determining each cycle of the collator; the improvement comprising additional switches disposed about the cams activating the stitcher and the ejection means at regular intervals during each cycle of the collator to allow two or more small sets of papers to be collated during each cycle.

3,584,866
MAGNETIC CONVEYOR
Hugh Ross, and Franklin E. Parke, both of Pittsburgh, Pa., assignors to Ropak Manufacturing Co., Pittsburgh, Pa.
Filed May 27, 1968, Ser. No. 732,311
Int. Cl. B65h *5/06*
U.S. Cl. 271—12 **12 Claims**



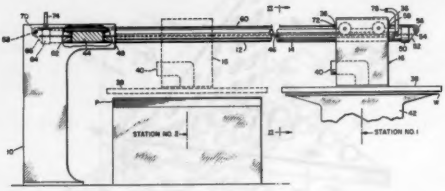
Mechanism for picking up a magnetically permeable sheet from a stack of such sheets and for transferring the sheet to a magnetic conveyor comprising a pickup arm that has both magnetic roller means and readily releasable suction cup means. Suction cup means grasp a sheet, preferably while magnetic roller means are not in contact with the sheet so that double sheeting is safely avoided, and then, by pivoting the pickup means, the sheet is contacted and held by magnetic roller means on the pickup arm, with the vacuum in the suction cup means then being released, before there is any motion of the sheet on a magnetic conveying belt so that tearing of the suction cup means and possible marking of the sheets are safely avoided.

3,584,867
CARD INPUT HOPPER
Norman Allen Cargill, Warminster, Pa., assignor The United States of America as represented by the Secretary of the Navy
Filed May 19, 1969, Ser. No. 825,581
Int. Cl. B65h *3/06*
U.S. Cl. 271—32 **1 Claim**



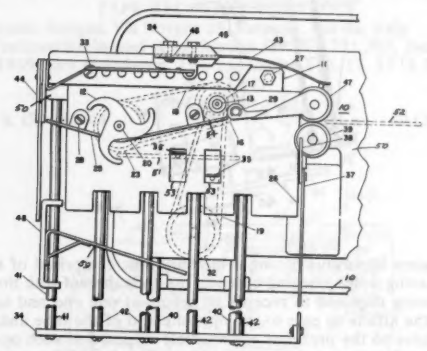
An input hopper with a roller-type friction picker and forced air inlet means which operates to separate sequentially stacked cards for tabulating or similar type machines. An improved hopper throat region designed is also described.

3,584,868
TRANSFER APPARATUS
Frank H Fromm, Jr., 4215 State Road, Drexel Hill, Pa., and Frank H. Fromm, III, 424 North Manor Road, Media, Pa.
Filed Mar. 19, 1969, Ser. No. 816,478
Int. Cl. B65h *29/38*
U.S. Cl. 271—84 11 Claims



A tubular casing is provided with fluid pressure for shifting an insert back and forth within the casing. The insert is coupled to a carriage which mounts a head moved back and forth between a pickup station and a delivery station in response to movement of the insert. The head pick up work at the pickup station, deposits it at the delivery station and returns to the pickup station to complete one cycle of operation.

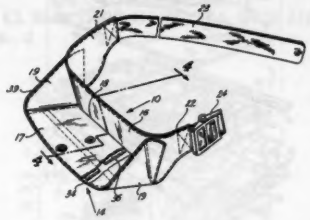
3,584,869
MAIL HANDLING MACHINE
Peter A. Traphagen, and Karol T. Dyczynski, both of Erie, Pa., assignors to Hanley Postal Supply, Inc., Erie, Pa.
Filed Jan. 2, 1969, Ser. No. 788,466
Int. Cl. B65h *29/44*
U.S. Cl. 271—87 6 Claims



A stacking device for letters, to be used with a mail cancelling machine, made up of a base plate, a guide plate supported over said base plate, a stop plate at one end of said base plate, a star wheel adjacent one end of said guide plate and a backing plate slidably supported over said base plate and adapted to engage a stack of letters. A pair of fingers are supported below said base plate. The fingers are operated by a mechanism by which they are moved up through the base plate then toward said backing plate. The fingers then move down so that the upper ends of the fingers clear and move past the bottom of the letters as they move toward the guide plate for another engagement of the letters. Thus the letters on the stack are kept out of the line of flow of letters from the cancelling machine.

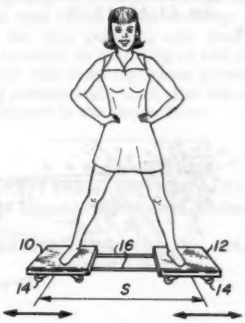
3,584,870
RESISTANCE MEMBER ATTACHED TO A SWIMMER
Edward A. Garst, 1845 9th Ave. North, Fort Dodge, Iowa
Filed Aug. 30, 1968, Ser. No. 756,483
Int. Cl. A63b *21/00*
U.S. Cl. 272—57R 1 Claim

The swimmer's training device includes an elongated pocket assembly having sidewalls hingedly connected together in a side-by-side relation and foldable end walls extended between and interconnected with the sidewalls. The end walls are of a size to permit movement of the sidewalls to a spread apart position to form an angle of substantially 90°. With the pocket extended transversely of the longitudinal axis of the body of the swimmer, one of the sidewalls is secured flat against the forward side of the swimmer's torso so that the pocket will open in the direction of swimming



movement. Thus, during swimming the pocket is opened by the action of the water against the second sidewall which functions as a resistance member to impede the passage of the swimmer through the water. The resistance member is of a hinged construction to provide an outer foldable section that is foldable against the inner section of the resistance member to vary the resistance offered by the resistance member against the swimmer's movement through the water.

3,584,871
PUSH-PULL TYPE LEG EXERCISING DEVICE
Ralph M. Kelmon, Jr., 2135 Columbia St., Palo Alto, Calif., and Ralph M Kelmon, 213 South St., Reading, Mass.
Filed May 19, 1969, Ser. No. 825,630
Int. Cl. A63b *23/04*
U.S. Cl. 272—82 7 Claims

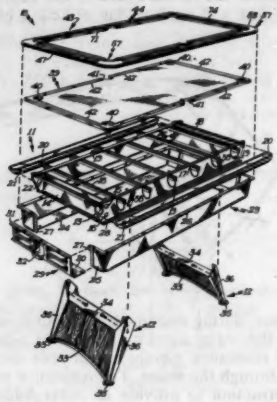


A novel muscle toning apparatus which includes a pair of displaceable platforms coupled together by a resilient means which enables the respective platforms to be alternately extended apart a predetermined distance and drawn back together into abutting relationship. The platforms are suitably configured so as to support an adult user having one foot placed on either platform with the toes pointing at substantially right angles to the other platform, and the direction of separation. The wheels or rollers attached to the bottom of the platforms rollingly engage the supporting floor surface, and are oriented so as to allow the platforms to be displaced only in the directions to and away from each other.

3,584,872
BUMPER DEVICE FOR POOL TABLE
Otto S. Nielsen, 4875 Sorrell Ave. N., Minneapolis, Minn.
Filed Nov. 12, 1968, Ser. No. 774,760
Int. Cl. A63d *15/00, 15/06*
U.S. Cl. 273—3 6 Claims

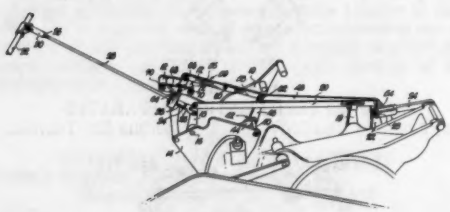
A pool table is comprised of a bed mounted on a steel frame which is supported by legs and which is capable of

ready assembly from a disassembled condition without the use of special tools or skills. A rail and bumper structure is mounted on the bed and is releasably connected the frame by bolts so that the bed is clamped between the rail and bumper



structure and the frame. A fabric cover is provided for the bed and is releasably clamped between the bed and the rail and bumper structure to permit ready removal and replacement thereof.

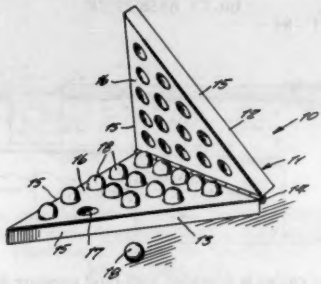
3,584,873
AUTOMATIC BOWLING PINSETTER OUT-OF-RANGE RAKE SWEEP CONTROL APPARATUS
Robert C. Buck, 16208 East 38th St., Independence, Mo.
Filed Oct. 6, 1969, Ser. No. 863,794
Int. Cl. A63d *5/08*
U.S. Cl. 273—43A **5 Claims**



Mechanism for automatically actuating the out-of-range rake sweep control in an automatic bowling pinsetter utilizes a mechanical linkage which is connected with the out-of-range pin detector mechanism. A first link of the mechanism is coupled with a lever which is movable in one direction in response to the detection of an out-of-range pin, and a second link, pivotally connected to the first link, is also connected with the range control reset lever which is movable in an opposite direction. Thus, when the first lever is moved in one direction, the second lever is automatically moved in the opposite direction to reset the pinsetter without interrupting the continuous operation of the machine.

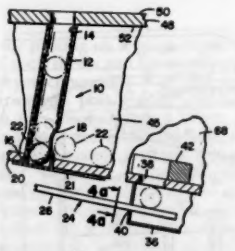
3,584,874
SOLITAIRE CHECKERS GAME APPARATUS
Jesse M. Clark, 582 Morrison Ave, Lexington, Ohio
Filed May 15, 1969, Ser. No. 824,887
Int. Cl. A63f *3/02*
U.S. Cl. 273—133 **1 Claim**

A base serving as a playing surface for a game of solitaire checkers, the base comprising a pair of triangular configurated panels hingedly connected together along one edge thereof, and each panel having a plurality of hemispherical recesses therein so to serve as stations for selectively holding a plurality of marbles being moved in the playing of the



game, the recesses in the two panels mating to form spherical cavities for said marbles.

3,584,875
APPARATUS HAVING MEMORY UNIT
Jack A. Pickford, Route 1, Box 138-S. Redwood Valley, Ukiah, Calif.
Filed Jan. 17, 1968, Ser. No. 698,603
Int. Cl. A63f *3/02*
U.S. Cl. 273—134 **15 Claims**

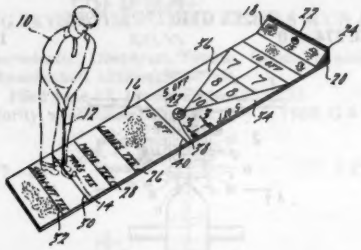


Memory apparatus having a memory unit comprised of a tube having a side opening between the ends thereof with the tube being disposed to receive an article at one end and to allow the article to pass to the opposite end of the tube and, responsive to the presence of an article disposed at such opposite end, to cause a second article to be ejected from the tube through the opening thereof. Means are provided to indicate the ejection of an article from the tube so that the memory apparatus is suitable for use as structure for playing a memory game wherein a number of the aforesaid memory units are utilized to receive player pieces in accordance with a predetermined manner of play.

3,584,876
ELECTRONIC CARD DEALER
Thomas E. Segers, 365 Beech Ave., Fairfield, Ohio
Filed Aug. 19, 1969, Ser. No. 851,218
Int. Cl. A63b *71/06;* **A63f** *1/18*
U.S. Cl. 273—138A **3 Claims**

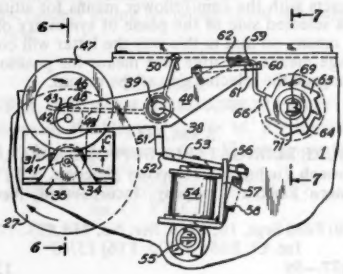
An electronic card dealer having control circuitry to establish various probabilities between relative values with a display panel of flashing cards which are selected at random.

3,584,877
GOLF GAME
Raymond J. Florian, 14440 Elwell, Belleville, Mich.
Filed Jan. 13, 1969, Ser. No. 790,523
Int. Cl. A63b 67/02
U.S. Cl. 273—176FB 5 Claims



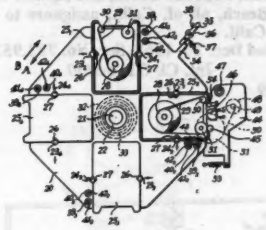
A portable golf game using a golf club and a ball and including a runner simulating a golfing green and having an inclined portion at the end of the runner with the incline and runner having selected scoring areas. The scoring area on the incline is a centrally located ball receiving opening. The scoring area on the runner may be in the form of marks simulating a triangulated shuffleboard score area. The inclination of the incline is such that some balls traveling up the incline with inadequate momentum will reverse and roll down onto the scoring area on the runner. A vertical wall is provided beyond the upper end of the incline to form a backboard.

3,584,878
TAPE RECORDER CONTROLS
Renato Seregni, Via Novara 28, Saronno, Varese, Italy
Continuation-in-part of application Ser. No. 791,305, Jan. 15, 1969, now abandoned. This application Feb. 17, 1970, Ser. No. 12,041
Int. Cl. G11b 5/56
U.S. Cl. 274—4 10 Claims



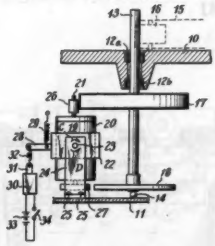
A tape recorder having controls for aligning the magnetic head with preselected tracks of a tape. The head is carried by a support structure for movement transversely of the tape to locations aligned with different tracks thereof. A cam coacts with the supporting structure to locate the latter at different positions, and a ratchet coacts with the cam to displace the latter from one camming position to another camming position. A rock lever has at one end a pawl tooth coacting with the ratchet and at its other end a rotary friction component which is eccentrically mounted, and a continuously rotating drive shaft is adapted to coact with the friction component to act therethrough to swing the rock lever through an operating cycle. An electromagnetic releasable holding device coacts with the rock lever to hold the latter normally in a rest position while being actuated to release the rock lever for movement back and forth through a predetermined operating cycle.

3,584,879
MEANS FOR BRINGING CAPSTAN INTO ENGAGEMENT AND DISENGAGEMENT FOR AUTOMATIC PLAYING APPARATUS UTILIZING A PLURALITY OF ENDLESS TAPE CARTRIDGES
Itsuki Ban, 829, Higashi-Oizumimachi, Nerima-ku, Tokyo-to, Japan
Filed Mar. 18, 1968, Ser. No. 713,655
Claims priority, application Japan, Mar. 18, 1967, Apr. 14, 1967, 42/16625;42/23425
Int. Cl. B65h 19/00; G11b 15/66; G03b 21/04
U.S. Cl. 274—4 8 Claims



In an automatic playing apparatus utilizing a plurality of endless tape cartridges a housing designed to bring a cartridge as indexed into the play position by movement thereof after effecting thereinto insertion of plurality of endless tape cartridges each having a pinch-roller therein, a swingable deck including a capstan, driving means therefor, and a magnetic head, said capstan feeding said endless tape stored in the cartridge in the play position in relation to said housing, said magnetic head playing the running endless tape, a deck driving means retracting said deck from the cartridge in the play position, time lag means automatically returning said deck in the original position after a certain time of period for driving endless tape stored in the cartridge as next indexed positioned in the play position, said deck driving means adapted to be actuated by searching an end mark on the tape during play, and said time lag means preventing said deck from returning automatically until after the cartridge as next indexed is positioned in the play position.

3,584,880
TAPE FAST FEED CONTROL APPARATUS
Itsuki Ban, 829 Higashi-Oizumimachi Nerima-Ku, Tokyo-to, Japan
Filed Mar. 25, 1969, Ser. No. 810,216
Int. Cl. G11b 15/10
U.S. Cl. 274—4 12 Claims



A tape fast feed control apparatus in an endless magnetic tape cartridge player comprising a rotary drive capstan for driving the tape in the cartridge, an electric motor swingably provided for driving the capstan and having an armature shaft, a first and second speed reducing device having the reduced speed ratio different to each other and for imparting rotation of the motor and the armature shaft, bias means

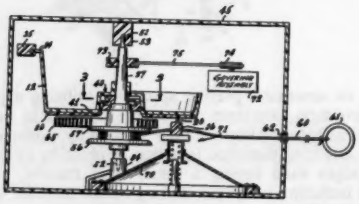
biasing the motor to a first position where the motor is connected to the capstan through the first speed reducing device, actuating means moving the motor from the first position to a second position where the motor is connected to the capstan through the second speed reproducing device, and control means controlling the operation of the actuating means, whereby the tape is normal fed or fast fed in relation to the operation of the control means.

3,584,881

INDEXING DEVICE FOR A SOUND REPRODUCING TOY

Karen B. Goodkind, Los Angeles; Brett B. Hamilton, Malibu; Ake L. Larsson, Redondo Beach, and Jimmie L. Wittington, Manhattan Beach, all of, Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Dec. 16, 1968, Ser. No. 783,952
Int. Cl. G11b *3/00*
U.S. Cl. 274—9 **10 Claims**



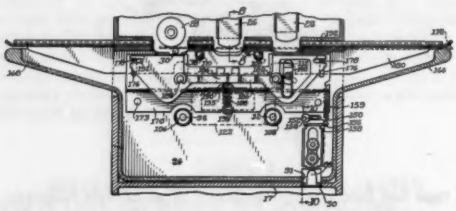
An indexing mechanism for a string-wound, spring-driven phonograph record member having interleaved grooves with lead-in portions circumferentially spaced about a peripheral portion thereof includes clutch means for connecting the record member to the drive means for reverse rotation when the string is pulled to rewind the motor until the record member is stopped by stop means for locating a predetermined lead-in portion adjacent the initial position of the tone arm at which time the clutch means slips permitting continued pulling of the drawstring while the record member remains stationary.

3,584,882

VERTICAL RECORD CARD ADAPTER FOR RECORD TAPE MACHINE

George F. Krtous, Chicago, and Carl G. Schreyer, Highland Park, both of, Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed June 30, 1969, Ser. No. 837,383
Int. Cl. G11b *5/00*
U.S. Cl. 274—4J **14 Claims**



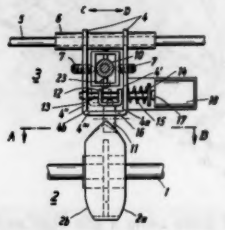
A vertical record card can be held at selected levels in sound recording or reproduction association with a recorder-player adapted for cassette contained record tape.

3,584,883

RECORD PLAYER FOR PLAYING A SELECTED SIDE OF A DISC RECORD

Friedel Horstmann, Espelkamp-Mittwald, Germany, assignor to Wilhelm Harting Werk fur Elektrotechnik und Mechanik, Espelkamp-Mittwald, Germany

Filed Sept. 26, 1968, Ser. No. 762,805
Claims priority, application Germany, Oct. 2, 1967, P 15 72 447.7
Int. Cl. G11b *17/22, 17/06*
U.S. Cl. 274—10 **10 Claims**



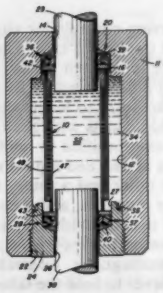
A record player for playing a selected side of a disc record. The disc record is in a vertical plane and rotates about a horizontal axis during the playing thereof, and a tone arm means initially has its axis coinciding with the plane subsequently occupied by the disc record. A bearing means supports the tone arm means for swinging moment about a vertical axis as well as about a horizontal axis, and a carriage means supports the bearing means for movement along this horizontal axis. A rotary cam means has a central plane of symmetry which coincides with the plane of the disc record during the playing thereof, and a cam follower means is carried by the carriage means. A yieldable positioning means locates the carriage means and the tone arm means at an initial position where the axis of the tone arm means coincides with the plane occupied by the disc record during the playing thereof, and the cam means coacts with the cam follower means for displacing the carriage means and tone arm means to a selected side of the plane occupied by the record during the playing thereof so that the tone arm means will be positioned for engaging a selected side of the record. A selecting means coacts with the cam follower means for situating the latter at a selected side of the plane of symmetry of the rotary cam means, so that in this way the latter will coact with the carriage means and tone arm means for positioning the latter to engage the selected side of the record.

3,584,884

PRESSURE ELONGATABLE SUPPORT APPARATUS

Francis Joseph Fuchs, Jr., Princeton Junction, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Sept. 10, 1968, Ser. No. 758,877
Int. Cl. B65d *53/00;* **F16j** *15/48*
U.S. Cl. 277—59 **13 Claims**



Support apparatus elongatable in response to the exertion of fluid pressure thereagainst and useful, for example, for

maintaining a fluid seal in proper sealing position. The elongation of the apparatus, or tendency of the apparatus to elongate, in response to the exertion of pressurized fluid thereagainst, urges the fluid seal into proper sealing position and supports the elements of the seal against disorientation and deformation.

3,584,885

SEALING DEVICE FOR ROTARY VESSELS SUCH AS KILNS

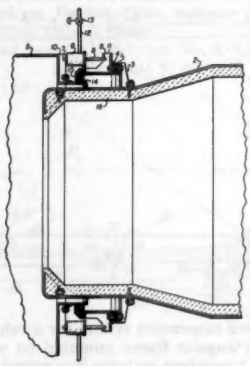
Johann Oberndorfer, Oberursel, Taunus, Germany, assignor to Metallgesellschaft Aktiengesellschaft

Filed June 17, 1969, Ser. No. 833,933

Claims priority, application Germany, July 6, 1968, G 6 750 292

Int. Cl. F16k *41/00*

U.S. Cl. 277—82 **1 Claim**



A rotary kiln is sealed against the infiltration of air and the escape of gases and dust by means of a slip ring seal. One ring is mounted on the housing and the other is mounted about the periphery of the rotating kiln. The two are urged into firm sliding engagement by means of a series of compressed air-cylinders acting on points about the edge of the stationary ring.

3,584,886

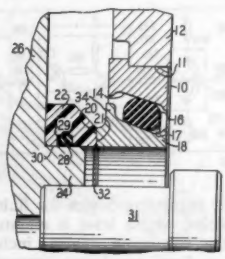
SEAL FOR HIGH SPEED APPLICATION

Fred E. Simpson, Washington; Edwin M. Kirchgessner, and Bernard F. Kupfert, Peoria, all of, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 30, 1969, Ser. No. 820,365

Int. Cl. F16j *15/54*

U.S. Cl. 277—92 **10 Claims**



A seal having a ramped member fixed within a counterbore in a nonrotatable member and a ramped ring separated from and supported relative to the fixed member by a torus. A sealing band on the ramped ring cooperates with a similar band on a ring fixed on a shoulder of a rotating member.

3,584,887

BIDIRECTIONAL ROTARY SEALS

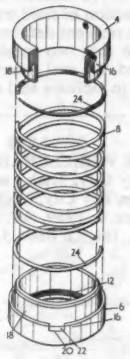
Ronald Brown, Whitefield, England, assignor to Burmah Oil Trading Limited, London, England

Filed July 10, 1967, Ser. No. 652,066

Claims priority, application Great Britain, July 15, 1966, 31882/66

Int. Cl. F16j *15/34*

U.S. Cl. 277—93 **4 Claims**



A mechanical seal for a shaft consisting of a loose seal ring and a fixed ring having grooves to seat a coaxial coil spring therebetween, with the ends of the spring being trapped in recesses in the rings whereby the fixed ring transmits rotation in either direction through the spring to the seal ring.

3,584,888

CABLE GLAND FOR ELECTRIC CABLE

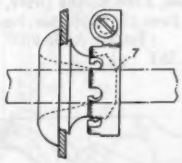
Frederick Joseph Lott, Saffron Walden, England, assignor to Light & Power Accessories Company Limited, Saffron Walden, England

Filed Mar. 29, 1968, Ser. No. 717,257

Claims priority, application Great Britain, Mar. 31, 1967, 14766/67

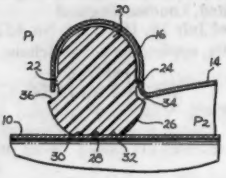
Int. Cl. F16k *41/00*; H01b *17/00*

U.S. Cl. 277—138 **2 Claims**



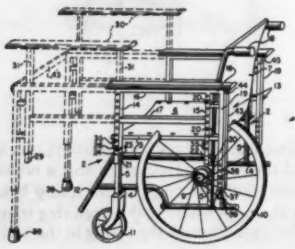
This invention provides a gland for electric cables comprising a grommet of resilient material having a tapered axial hole which is distended by a cable when forced into the gland so that radial pressure is exerted on the cable whereby a fluidtight seal is formed between the grommet and the cable. The grommet has a reduced diameter portion which is encircled by a collar which can be tightened to constrict the cable so that axial displacement of the cable is prevented.

3,584,889
FLEXIBLE SEALING RING
Paul A. Sheets, 5833 Nagle Ave., Van Nuys, Calif.
Filed May 13, 1968, Ser. No. 728,586
Int. Cl. F16j 15/24
U.S. Cl. 277—208 5 Claims



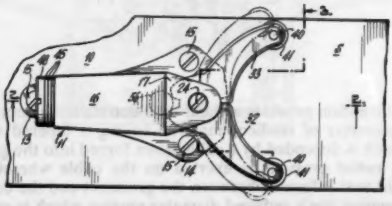
A seal for a connection of fluid transmitting duct elements which is formed of a resilient deformable material and having a configuration such that two substantially separate sealing surfaces are provided, the seal structure using the fluid pressure within the duct to increase seal effectiveness.

3,584,890
CONVERTIBLE WHEELCHAIR CONSTRUCTION
Frank P. Presty, Bay City, Mich., assignor to Delta Physical Therapy Associates, Bay City, Mich.
Filed Apr. 1, 1969, Ser. No. 811,937
Int. Cl. B60h 3/00
U.S. Cl. 280—7.1 12 Claims



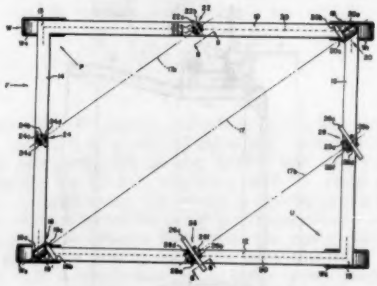
A wheelchair having removable arm rests capable of being fitted to the chair to extend forwardly thereof and provided with extensible and retractable supports engageable with the floor, thereby enabling the chair to be converted to a structure which may be utilized to assist a patient in rising from and returning to the chair. The supports may be provided with friction means or ground engaging wheels so as to permit it to be used as parallel bars, a pickup walker or a wheeled walker. A stabilizing bar interconnects the arm rests when they are in their forwardly extended positions so as to stabilize them.

3,584,891
SKI BINDING RELEASABLE TOE CLAMP
Joseph N. Khazzam, 3386 Bertha Drive, Baldwin, N.Y.
Filed June 27, 1969, Ser. No. 837,275
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35T 10 Claims



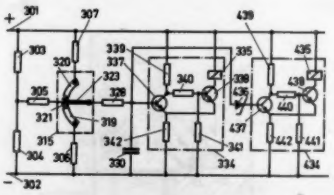
A ski binding releasable toe clamp includes a pair of roller-supporting rearwardly outwardly projecting clamp arms swingable about and vertically adjustable on a common pivot pin and are provided at their inner ends with symmetrical rear cam surfaces having raised portions between their inner and outer end sections. A cam follower roller is adjustably spring urged toward the cam surfaces so that movement of one of the arms disengages the roller from the other cam surface and each cam is urged inwardly or outwardly when the roller engages the cam surface on the inner or outer side of the rise surface respectively.

3,584,892
ARTICULATED VEHICLE SUSPENSION SYSTEM
Ronald D. Moore, Saginaw, Mich., assignor to Saginaw Products Corporation, Saginaw, Mich.
Filed July 28, 1969, Ser. No. 845,465
Int. Cl. B62d 21/02
U.S. Cl. 280—104 16 Claims



An articulated suspension system for a vehicle wherein an articulated rectangular frame mounted on wheels or other ground support members includes two articulately connected angle portions which are adapted to be pivotally connected to a load bearing frame about spaced-apart generally parallel axes, preferably by fixed and movable pivot mounts. The two portions pivot relative to each other about an axis which extends diagonally of the articulated rectangular frame and is parallel to the spaced apart axes mentioned.

3,584,893
ELECTRONIC LEVEL REGULATORS FOR FLUID-TYPE SUSPENSIONS OF MOTOR VEHICLES AND THE LIKE
Franz Tuczek, and Reinhard Alffen, both of Eitorf, Germany, assignors to Firma Boge G.m.b.H., Eitorf Sieg, Germany
Filed Mar. 28, 1969, Ser. No. 811,379
Claims priority, application Germany, Mar. 28, 1968, P 17 55 087.7
Int. Cl. B60g 17/00
U.S. Cl. 280—124 15 Claims



An electronic regulating device for fluid-type suspensions for motor vehicles, whose level is maintained substantially constant by the regulating device, includes a regulating switch having an "up" regulating contact surface which is grounded, a "down" regulating contact surface connected to the ungrounded terminal of a source of DC potential and a "neutral" contact surface between the "up" and "down" contact surfaces. The switch includes a contact arm which is movable over the surfaces in accordance with the distance

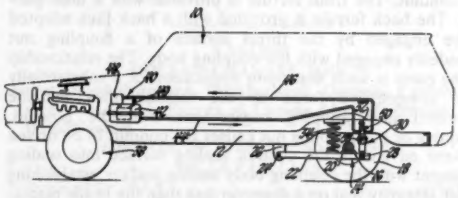
between the vehicle body and the vehicle axle. A condenser has one terminal connected to the grounded terminal of the source, and charging resistance means connect the other terminal of the condenser to the switch arm. First and second control amplifiers are connected to the condenser, and one is operable to initiate feeding of the fluid and the other is operable to initiate draining of the fluid relative to the suspension system. One control amplifier is activated by condenser voltages below a lower limiting voltage, and the other control amplifier is activated by condenser voltages above an upper limiting voltage, both related to the potential source. Both control amplifiers are deactivated at condenser voltages between the upper and lower limiting voltages. The "neutral" contact surface may be made of dielectric material or may be a conductive surface at a small potential above ground. The control amplifiers may comprise Schmitt trigger devices.

3,584,894

INTEGRAL DELAY-TYPE HEIGHT CONTROLLER

George W. Jackson, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed June 23, 1969, Ser. No. 835,398
Int. Cl. B60g 21/06
U.S. Cl. 280—124 6 Claims



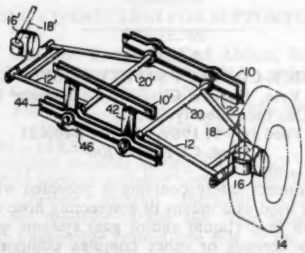
In preferred form, a combined fluid spring component and height controller for use in an automatic leveling system for a vehicle. The controller includes a cam operator extending through a side port in the controller housing to engage a part of the spring component to reflect changes in the vehicle attitude. Intake and exhaust valve assemblies are fluidly communicated with the control chamber of the fluid spring through the valve operator port. These valve assemblies are selectively opened and closed by a reciprocating shaft connected to the cam operator by overtravel means and further connected to a damping unit that controls movement of the shaft.

3,584,895

AUTOMOTIVE SUSPENSION MECHANISM

Hitoshi Uemura, Yokohama, and Yuichiro Motomura, Tokyo, both of Japan, assignors to Nissan Motor Company Limited, Kanagawa-ku, Yokohama, Japan

Filed Oct. 7, 1969, Ser. No. 864,465
Int. Cl. B60q 9/02
U.S. Cl. 280—124 10 Claims



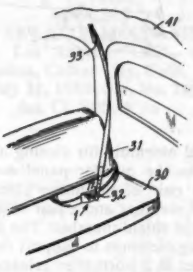
An independent suspension mechanism for automotive vehicles having a pair of suspension arms which are pivotally connected with the structural members of the vehicle body by means of specially constructed support member. The support member may include a rigid or, preferably, resilient bushing providing a sufficient amount of prestress in the axial and radial directions of the pivot shaft of the suspension arm. The support member may be connected to the structural member or members through a brace which is substantially resilient in the direction of the pivot shaft.

3,584,896

COMBINATION SHOULDER HARNESS AND SEAT BELT BUCKLE SYSTEM

George Jantzen, New York, N.Y., assignor to M. Steinthal & Company Incorporated, New York, N.Y.

Division of Ser. No. 652,343, July 10, 1967, Pat. No. 3,418,007.
This application Aug. 1, 1968, Ser. No. 763,461
Int. Cl. B60r 21/10
U.S. Cl. 280—150 3 Claims



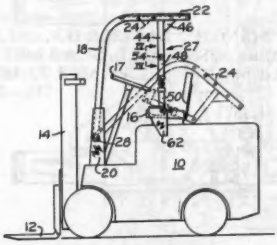
A combination seat belt buckle in which one of a series of loops towards the end of a retractable shoulder harness strap engages a hook formed on the buckle release fitting. When the release fitting is engaged in the buckle, the hook is closed off, retaining the harness strap. Upon release, the harness strap is automatically retracted behind the roof fabric of the vehicle into a constant tension retractor which extends the end of the strap into the vehicle in the fully retracted condition.

3,584,897

PROTECTIVE GUARD FOR LIFT TRUCKS

Robert J. Frantz, Brooklyn, and Larry A. George, Willowick, both of, Ohio, assignors to Towmotor Corporation, Cleveland, Ohio

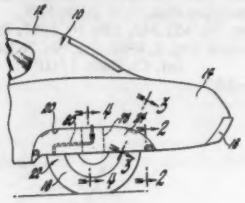
Filed Dec. 4, 1969, Ser. No. 882,132
Int. Cl. B60r 27/00
U.S. Cl. 280—150C 3 Claims



An overhead guard for protecting the driver of a lift truck from falling objects with means to enable folding of the guard downwardly when vertical clearance is limited as by a doorway or other structures. The means for folding is constructed to enable folding with little physical effort by the operator as he sits in the operator's station and to permit the lift truck to

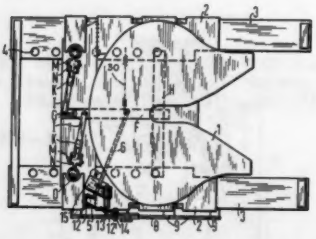
be driven in a normal manner from the operator's station with the guard in its lowered position.

3,584,898
FENDER SHIELD ASSEMBLY
Arthur B. Pearson, Orchard Lake, and Henry T. Mitchell, Royal Oak, both of, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Nov. 7, 1969, Ser. No. 874,821
Int. Cl. B62d *25/16*
U.S. Cl. 280—153R **3 Claims**



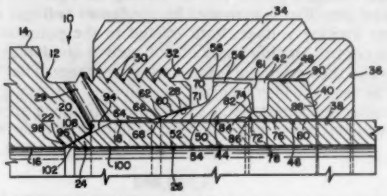
A fender shield assembly for closing a portion of a wheel access opening in the quarter panel member of a vehicle body includes a pair of mounting elements on the panel member, a shield member and a pair of support brackets fixedly secured to the shield member. The support brackets engage the mounting elements to support the shield member on the panel member in a normal or relaxed position tilted out of the plane of the opening and the mounting elements constrain portions of the support brackets during forcible rotation of the shield member into the plane of the access opening so that a tight rattle-free connection results therebetween and the shield member is biased toward relaxed position.

3,584,899
MECHANISM FOR ADJUSTING THE POSITION OF A SEMITRAILER COUPLER ON A SEMITRAILER TRACTOR
Georg Gottler, and Horst Gottler, both of Munich, Germany, assignors to Johann Rockinger
Filed Mar. 19, 1969, Ser. No. 808,620
Claims priority, application Germany, Mar. 26, 1968, Sept. 20, 1968, P 1755062.8;P 1780488.5
Int. Cl. B62d *53/08*
U.S. Cl. 280—407 **11 Claims**



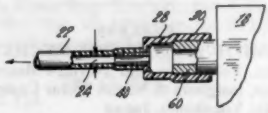
The lower fifth wheel of a trailer coupling on a tractor is adjustable on the tractor in the normal direction of travel for proper load distribution. A selector on the tractor may be manually set for a desired fifth wheel position, and spring loaded locking pins on the fifth wheel are released by a cam on the selector for engaging openings in the trailer when the fifth wheel moving in the aforementioned direction reaches the selected position.

3,584,900
HIGH-PRESSURE SEALING AND GRIPPING DEVICE
Fred A. Lennon, Chagrin Falls, and Emery J. Zahuranec, Solon, both of, Ohio, assignors to Sno-Trik Company, Solon, Ohio
Filed Sept. 18, 1968, Ser. No. 760,576
Int. Cl. F16l *19/08, 55/00*
U.S. Cl. 285—14 **26 Claims**



A fitting for a conduit having a frustoconical forwardly converging sealing surface at one end thereof. A coupling body is provided with a bore, a counterbore for receiving the conduit, a frustoconical sealing surface, and a frustoconical camming mouth. A front and back ferrule are received on the conduit. The front ferrule is provided with a nose portion. The back ferrule is provided with a back face adapted to be engaged by the thrust surface of a coupling nut threadedly engaged with the coupling body. The relationship of the parts is such that upon application of a substantially axial compressive force to the ferrules they become deformed into gripping engagement with the conduit. Torquing of the coupling nut causes the conduit to be driven forward advancing the conduit sealing surface into sealing abutment with the coupling body sealing surface establishing a high integrity seal on a diameter less than the inside diameter of the ferrules in a deformed state.

3,584,901
PLASTIC TUBING COMBINATION
Allan H. Willinger, New Rochelle, N.Y., assignor to Mattel-Aquarium, Inc., Hawthorne, Calif.
Continuation of application Ser. No. 676,163, Oct. 18, 1967, now abandoned. This application Mar. 26, 1970, Ser. No. 20,486
Int. Cl. F16l *25/00*
U.S. Cl. 285—177 **5 Claims**

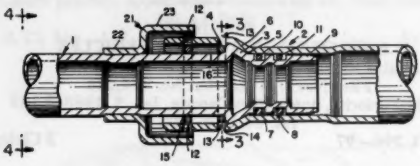


The invention is directed to a novel plastic tubing combination comprising a length of plastic tubing having a reduced inside and outside diameter, which tubing is adapted by novel connecting means to be joined with larger diameter members.

3,584,902
QUICK-CONNECT SAFETY COUPLING
Gerrard N. Vyse, Garden City, Mich., assignor to Anchor Coupling Co., Inc., Libertyville, Ill.
Filed July 9, 1969, Ser. No. 840,421
Int. Cl. F16l *37/00*
U.S. Cl. 285—305 **2 Claims**

A quick-connect safety coupling is provided which is intended to be used as a means of connecting hose assemblies and tubing in fluid (liquid and/or gas) systems without the use of screw threads or other complex components, said coupling being characterized by a safety feature which permits the coupling components to be partially disengaged with gradual release of pressure and without flying apart due to in-

ternal pressure. The coupling consists of a male member and a female member with one or more O-ring seals between them, an upset portion on the male member providing a shoulder or abutment, a plurality of transverse slots spaced longitudinally in the female member, and resilient retaining clips in the slots one of which clips abuts against said shoulder and another of said clips being spaced longitudinally

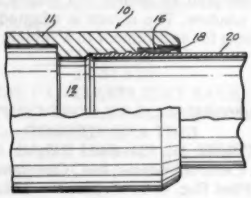


and preferably shielded so that it cannot be removed readily, whereby when the first named clip is removed the two members can be partially separated or uncoupled with respect to one another so as to permit gradual relief of the internal pressure in the system, after which the other retaining clip or clips can be removed and the two members entirely separated or uncoupled.

3,584,903
ROLLED CHANNEL JOINTS

James David Pritchard, Peterborough, Ontario, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Ontario, Canada

Filed Apr. 29, 1968, Ser. No. 724,997
Int. Cl. F16l *13/14*
U.S. Cl. 285—382.4 **3 Claims**



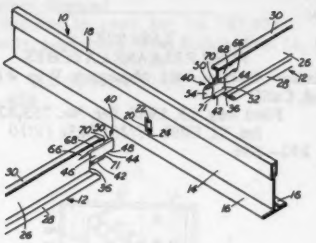
A strong and leak-free hub assembly for use with the pressure tubes of a nuclear reactor is disclosed in which the hub includes a hard insert having at least one groove formed in it, the hardness of the insert being greater than the hardness of the tubular element with which it is joined. Typically, the hub is formed of stainless steel, the insert is formed of surface hardened stainless steel and the tubular element is a zirconium-niobium alloy. The insert has a hardness greater than the hardness of the tubular element.

3,584,904
LOCKING CONNECTION FOR SUPPORTING GRID SYSTEMS

Robert P. Lickliter, Hamburg; Earl Abbott, Hamburg, and John F. Reeves, Tonawanda, all of, N.Y., assignors to Flangeklamp Corporation, Buffalo, N.Y.

Filed Mar. 13, 1969, Ser. No. 806,977
Int. Cl. F16b *21/08;* **E04b** *1/38*
U.S. Cl. 297—189.36 **10 Claims**

A first support member having a web with a slot therein and a second support member having a web and a locking connector formed integral therewith and extending therefrom for insertion in the slot. The connector has a locking tab engageable behind one side of the first support member web and reversely bent into a recess defined by a first reinforcement channel formed in the connector. A projection in the channel prevents complete collapse of the tab into the recess during insertion through the slot. A second reinforcement channel disposed above the first channel extends therebeyond into the second support member web.

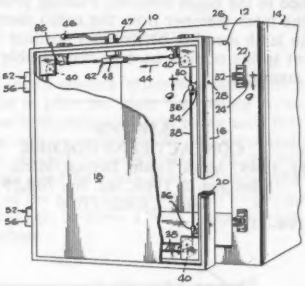


Stop shoulders on the locking connector engage the other side of the first support member web.

3,584,905
COVER LATCH MECHANISM

Leo J. Emenaker, Los Angeles, Calif., assignor to Data Products Corporation, Culver City, Calif.

Filed July 31, 1968, Ser. No. 749,143
Int. Cl. E05c *9/16*
U.S. Cl. 292—38. **3 Claims**

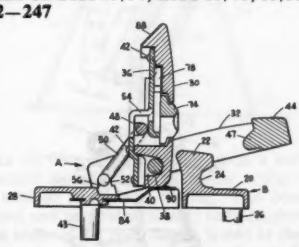


Latching apparatus for retaining a cover in extremely tight engagement with a housing at all points of the cover perimeter, as for a cabinet sealed against radio frequency interference. The apparatus comprises a series of latches spaced about the cover perimeter, each latch including a flat-end bolt on the cover which slides behind a cylindrical strike on the housing. A cable which extends over pulleys and along the perimeter of the cover operates each latch, and a hand or power operated lever moves the cable to operate all latches simultaneously.

3,584,906
DRAW BOLT

Boleslaw Ludwig Budzyn, Passaic, N.J., assignor to Presto Lock Co., Inc.,, Garfield, N.J.

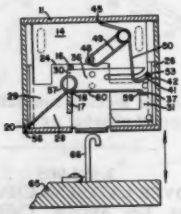
Filed Aug. 21, 1969, Ser. No. 851,845
Int. Cl. E05c *19/14;* **E05b** *65/48, 65/52*
U.S. Cl. 292—247 **17 Claims**



A draw bolt for luggage, containers, receptacles, or the like cooperable with a hasp is constructed so that a manually

operable latch member imparts a controlled, predetermined path of movement to an associated loop member to cause the loop member to automatically engage or disengage the hasp.

3,584,907
PUSH RELEASE LATCHES
Paul Mathew Mertes, 4401 Moorpark Way #1, North Hollywood, Calif.
Filed Aug. 23, 1968, Ser. No. 755,522
Int. Cl. E05b *63/20*; E05c *19/10*
U.S. Cl. 292—336 **6 Claims**

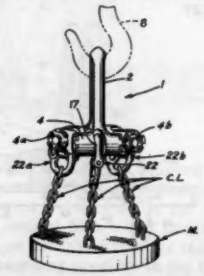


A flush-type push release door latch is disclosed herein having a slidable member carried in a housing adapted to movably position a latching member in holding relationship with respect to a catch member in response to pushing pressure applied to the catch member. Pushing pressure also disengages the latch member from the catch member. The action of the latch member between its position is determined by resilient spring tension on both the slidable member and the latch member.

3,584,908
CONTACT LENS HOLDER
Frank Ray, 19497 Mark Twain, Detroit, Mich.
Filed Jan. 2, 1969, Ser. No. 788,591
Int. Cl. G02c *11/00*
U.S. Cl. 294—1 **3 Claims**

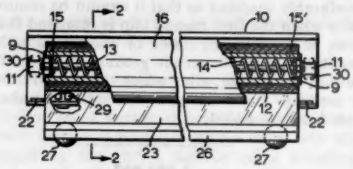
A contact lens holder which includes a tubular shaft and a slightly concaved adhesion disc at one or both ends thereof and including a tubular shank snugly nested and secured within said shaft, together with a flexible double-adhesive disc which may be selectively mounted within the adhesion disc for increased holding power.

3,584,909
SLING BAIL
Edward R. Behnke, Lockport, N.Y., assignor to Columbus McKinnon Corporation, Tonawanda, N.Y.
Filed Apr. 29, 1969, Ser. No. 820,235
Int. Cl. B66c *1/04*
U.S. Cl. 294—65.5 **2 Claims**



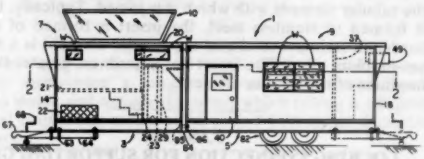
A sling bail adapted to hang from a lift crane hook or the like and suspend therefrom by means of chain legs a load lift magnet; said bail comprising a hook engaging eye portion formed integrally with a base portion which supports quick-disconnect chain links from which depend the magnet support chain legs. The invention features provision of improved means for detachably connecting the upper ends of the magnet support chain legs to the sling bail and supporting the sling bail in an upright condition when it is disconnected from the lift crane hook.

3,584,910
LIGHT FILTER FOR MOTOR VEHICLES
Sam Lupul, Red Deer, Alberta, Canada
Filed Nov. 7, 1968, Ser. No. 774,040
Claims priority, application Canada, Jan. 5, 1968, 9,145
Int. Cl. B60j *3/00*
U.S. Cl. 296—97 **3 Claims**



A light filter for use with motor vehicles comprising a color-tinted transparent screen roller-mounted within a housing which is secured by spring clip means to a vehicle sun visor or side window. The screen is adapted to be extended from the housing for securement to a vehicle window.

3,584,911
MODULAR MOBILE AIR TRAFFIC CONTROL TOWER UNIT AND METHOD
Anthony A. Coletto, Jr., Cleveland Heights, Ohio, assignor to Air Traffic Control Systems, Inc., Cleveland, Ohio
Filed Dec. 4, 1968, Ser. No. 781,230
Int. Cl. B62d *63/00*
U.S. Cl. 296—1 **11 Claims**



A modular mobile air traffic control tower which includes a wheeled trailer frame made up of at least two releasably secured building module supporting frame modules. One of the building modules has an air traffic control observation deck projecting from its roof and the other, which is the wheel mounted module, may be used as an office by the traffic controller.

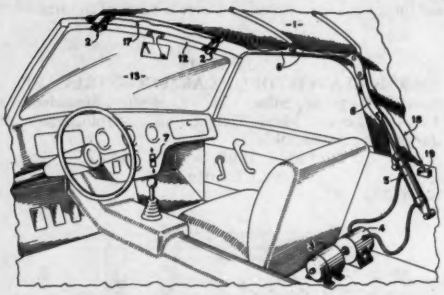
When the modules are disconnected, the module having the observation deck can become a permanent air traffic control tower mounted on a fixed building roof and the other module may retain its function as a mobile office.

3,584,912

CONTROL DEVICE FOR CONTROLLING A LOCKABLE MOVABLE CLOSING PANEL AND IN PARTICULAR A TOP OF A CONVERTIBLE VEHICLE

Andre Bernard Leger, Sartrouville, France, assignor to Automobiles Peugeot, Paris, France and Nationale Des Usines Renault, Billancourt, France

Filed May 14, 1969, Ser. No. 824,616
Claims priority, application France, July 25, 1968, 160569
Int. Cl. B60j 7/12
U.S. Cl. 296—117 5 Claims



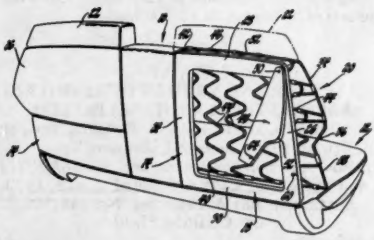
Control device for a panel, such as the top of a convertible vehicle. The locking means for locking the top in the closing position are arranged to prevent operation of a motor for shifting the top when the locking means are not unlocked or insufficiently unlocked.

3,584,913

SIDE PANEL FOR SEAT BACK

Rudolph A. Ferrara, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 28, 1969, Ser. No. 880,655
Int. Cl. A47c 27/16
U.S. Cl. 297—218 4 Claims



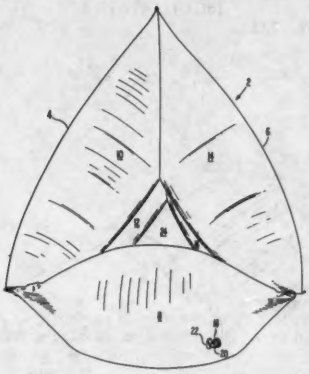
A side panel attached to a seat back frame and movable sideways between a first position wherein the side panel is located within the confines of the frame and a second position wherein it extends laterally outwardly beyond the side limits of the frame. The side panel has an outer configuration which corresponds to a portion of a cushion assembly attached to the frame that also extends laterally outwardly beyond the side limits of the frame. Thus, when the side panel is in the second position, it cooperates with the cushion assembly to provide support for the cover material used in trimming the seat back.

3,584,914

INFLATABLE FURNITURE

Colin P. Williams, 193 Stanley Park Road, Carshalton Beeches, Surrey, England

Filed July 26, 1968, Ser. No. 747,933
Claims priority, application Great Britain, Feb. 16, 1968, 7619/68
Int. Cl. A47c 27/08, 27/18
U.S. Cl. 297—456 9 Claims



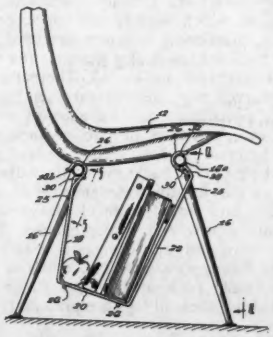
The invention is a seatless inflatable chair which is substantially triangular in plan, the chair comprising in combination a base and two inflatable sides, and being such that a person seated therein will be supported by the sides and will have their buttocks situated in space bounded by the base and the sides. The chair may be made from polyvinyl chloride and the two sides of the chair may increase in height towards the apex of the triangle to form a back support from a person seated in the chair.

3,584,915

BOOKRACK

Leon C. Meyers, Jr., Battle Creek, Mich., assignor to The Vecta Group, Inc.

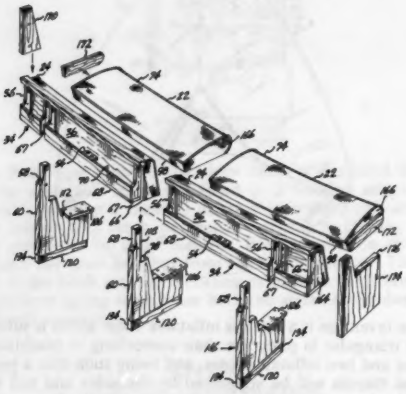
Filed Feb. 3, 1969, Ser. No. 795,834
Int. Cl. A47c 9/14
U.S. Cl. 297—192 19 Claims



A bookrack for use in combination with a seat having a rigid frame which includes bars extending across the underside of the seat at its front and rear. The bookrack has laterally spaced and generally parallel rods of springable rod stock, at least some of the rods having hooks at their forward and rearward ends engaging the front and rear frame bars. The rods are generally U-shaped to form book supporting means. At least some of the rods have resilient locking means formed integral therewith for engaging the frame bars to

prevent the hooks from becoming disengaged from the frame bars. In one form of the invention, the hooks and the locking means are formed on alternate rods. In another form of the invention both the hook and the locking means are formed integral with and on the same rod.

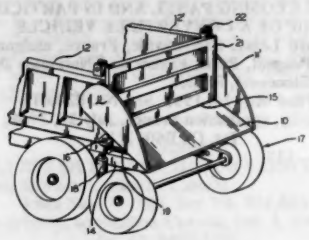
3,584,916
RADIUS PEW MODULES
Theodore L. Bayes, Tacoma, Wash., assignor to Sydney C. Selden
Filed Nov. 12, 1968, Ser. No. 774,630
Int. Cl. A47c 1/12
U.S. Cl. 297—232 **9 Claims**



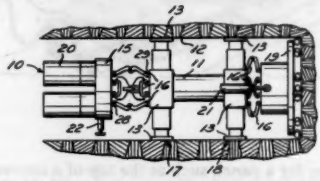
Basic radius pew modules and derivatives thereof have a frame constructed of essentially wood components none of which have compound curved surfaces. Eventually compound curve results are obtained by adding formed upholstered cushion materials to the frame. During final assembly, in a church for example, factory assembled curved back frame subassemblies are initially fitted with legs into free standing frames which initially are not secured to a floor. Subsequently, positioning fasteners are used to secure legs and curved back subassemblies permanently together. Then curved back cushions are added. Thereafter, curved seat frame and curved seat cushion subassemblies are secured across leg supports to complete a series of midrow modules. Each of these legs, with respect to its width is used only in part and is therefore ready to receive ends of adjacent subassemblies of both curved backs and seats. Adjacent aisles, end modules of various lengths complete rows of various total arcuate lengths. End modules are of the same modular construction until a row end is approached. Then one of a selected group of end style designs is installed and the end leg support fully supports such end. When an arcuate row of a radius is finally positioned and/or all arcuate rows are finally positioned, then all legs are preferably secured to the floor.

3,584,917
SPILL PANS FOR DUMP TRUCKS
Ralph H. Ullenberg, 1580 Highland Drive, Elm Grove, Wis.
Filed Sept. 16, 1969, Ser. No. 858,409
Int. Cl. B60p 1/26
U.S. Cl. 298—7 **5 Claims**

A spill pan is provided for dump trucks to keep the material being unloaded from the interfering with rear wheels. The spill pan rotates about the forward lip of the pan. This forward lip is kept juxtaposed to the rear edge of the track bed.

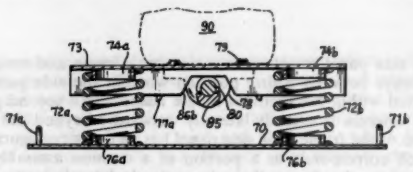


3,584,918
ARTICULATED TORQUE ARM CONSTRUCTION
Alfonso T. Gaglione, Solon; Larry L. Snyder, Macedonia, and Louis L. Lipnos, Maple Heights, all of, Ohio, assignors to Jarva, Inc., Solon, Ohio
Filed Oct. 7, 1969, Ser. No. 864,325
Int. Cl. E01g 3/04
U.S. Cl. 299—31 **12 Claims**



A tunneling machine is disclosed having a support frame and a movable frame carried on the support frame by articulated torque arm units. Each unit includes two torque arms pivotally connected together at a central pivot point. Each arm includes a U-shaped yoke member, and the end portions of one of the yoke members are pivotally connected to the movable frame at body pivot points while the end portions of the other are pivotally connected to the support frame at body pivot points. A reinforcing member and a prestressing rod cooperate to prevent separation of the end portions of each yoke member to prevent separating and slamming together of their thrust bearing contact surfaces under severe loading conditions. Self-aligning ball bushings are provided at each body pivot point and at the central pivot point to insure perfect thrust bearing contact surface alignment even if the unit is deflected by severe shock loading.

3,584,919
APPARATUS FOR AND METHOD OF REMOVING DRY BALLAST FROM A PNEUMATIC TIRE
August R. Canonico, 10311 Raritan, Houston, Tex., and William B. Brown, 1930 Chaparral, Houston, Tex.
Continuation-in-part of application Ser. No. 563,588, July 7, 1966, now Patent No. 3,498,679, dated Mar. 3, 1970. This application July 3, 1969, Ser. No. 848,766
Int. Cl. B65g 53/40
U.S. Cl. 302—56 **4 Claims**



This invention provides means, including a platform and means to support same for oscillatory, vibratory motion so

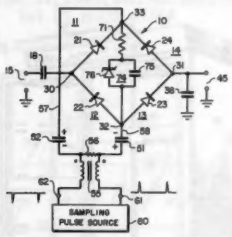
that a large size vehicle tire containing dry ballast may be disposed on the platform and thus moved and vibrated whereby an eductor tube connected outwardly to a solids removal pump may have its inner end insertable into the tire to follow the descending level of granular ballast therein to substantially the bottom of the tire, as the platform is supported (a) to move up and down but continuously parallel to the base, (b) or preferably with spring urged, modulatory motion, whereby the upper surface of the ballast is maintained substantially level in descent.

3,584,920

SAMPLING DEVICE

Arthur R. Sills, Lakewood, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed May 20, 1969, Ser. No. 826,115
Int. Cl. H03k *17/00*
U.S. Cl. 307—257 **2 Claims**



A sampling diode bridge circuit in which the sampling diodes of the bridge are reverse biased until rendered conducting by the presence of sampling pulses wherein the reverse biasing voltage for the sampling bridge diodes is created by the sampling pulses and wherein means including a parallel combination of a zener diode and capacitor in series with a resistor in one of the bridge diagonals regulates the reverse biasing voltage during the interval between sampling pulses.

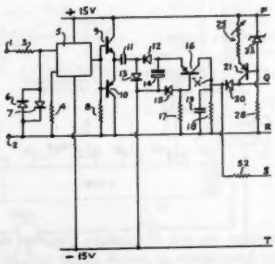
The invention described herein may be manufactured, used, and licensed by or for the Government for Governmental purposes without the payment to me of any royalty thereon.

3,584,921

BRAKING SYSTEMS AND/OR TRACTIVE SYSTEMS

Kenneth D. E. Crawford, London, England, assignor to Westinghouse Brake and Signal Company, Limited, London, England

Filed Jan. 22, 1969, Ser. No. 793,141
Claims priority, application Great Britain, Feb. 7, 1968, 6106/68
Int. Cl. B60t *8/08*
U.S. Cl. 303—21 **8 Claims**



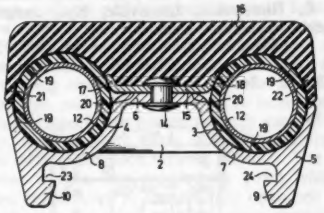
A system for controlling the braking or tractive forces applied to the wheels of a wheeled vehicle is provided wherein a signal corresponding to the rate of change of the peripheral speed of a wheel is derived and a control circuit, responsive to this signal attaining a value corresponding to an excessive rate of change of peripheral speed, produces a control signal for causing appropriate modification of the tractive forces, in the case of spinning wheels, or of the braking forces, in the case of spinning wheels, or of the braking forces, in the case of sliding wheels. The charge on a capacitor in the control circuit, which normally follows a voltage corresponding to the speed of the wheel, varies at an independent, different rate upon production of the control signal, and traction or braking is resumed when the voltage on the capacitor equals the speed voltage, a time in advance of regained correspondence between the wheel and vehicle speed.

3,584,922

TUBULAR CHAIN LINK BODY

Otto Koerner, and Manfred Boms, both of Remscheid, Germany, assignors to Diehl, Nuremberg, Germany

Filed July 22, 1969, Ser. No. 843,421
Claims priority, application Germany, July 23, 1968, P P 17 80 016.7
Int. Cl. B62d *55/20*
U.S. Cl. 305—36 **13 Claims**



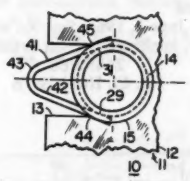
A track link body for track-laying vehicles and method of making such track link, according to which two glass-fiber-reinforced tubular members of synthetic resin which are arranged in parallel spaced relationship to each other are interconnected by glass-fiber-reinforced sideplate means, respectively located on opposite ends of said tubular members.

3,584,923

BEARING DEVICE

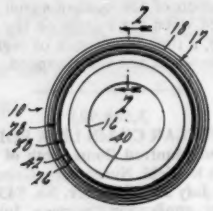
Andre Frans Goossens, Waasmunster-Sombeke, Belgium, assignor to The Singer Company, Rochester, N.Y.

Filed Jan. 7, 1970, Ser. No. 1,161
Int. Cl. F16c *35/02*
U.S. Cl. 308—15 **3 Claims**



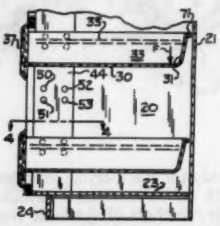
A bearing device is disclosed wherein a bearing having sidewalls straddles a slot of a chassis for supporting the bearing and a bifurcated spring member coacts with opposed wedgelike openings communicating with the slot and proximal to the straddled bearing to lock the bearing in a desired position by a double lever action of the bifurcated spring member.

3,584,924
SEAL AND BEARING ASSEMBLY
William E. O'Neill, Davisburg, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.
Filed Dec. 26, 1968, Ser. No. 786,973
Int. Cl. F16c 33/78
U.S. Cl. 308—187.2 5 Claims



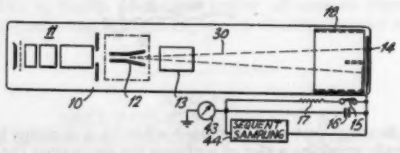
A bearing assembly including a grease seal for keeping lubricant in and a seal for keeping dirt out.

3,584,925
DRAWER STACK AND MEANS FOR EFFICIENTLY SUPPORTING THE DRAWERS THEREOF
Louis E. Himelreich, Louisville, Ky., assignor to H. J. Scheirich Company, Louisville, Ky.
Filed Feb. 10, 1969, Ser. No. 797,976
Int. Cl. A47b 88/14
U.S. Cl. 312—343 3 Claims



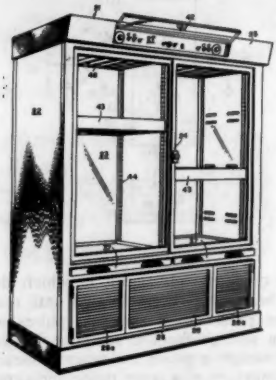
A stack of molded plastic drawers each having side rails integral therewith and containing at least one groove on a horizontal rail face is mounted between upright supports having arrays of rail engaging members adapted to contact both the upper and lower faces of the rails. The drawers and the supports provide a kit suitable for converting conventional single-drawer storage cabinets into cabinets fully equipped with a drawer stack.

3,584,926
CATHODE-RAY TUBES FOR SIGNAL AVERAGING OR TOTALIZING
Christopher Davies, Levenshulme, Manchester, England, assignor to National Research Development Corporation, London, England
Filed June 3, 1969, Ser. No. 829,996
Claims priority, application Great Britain, June 4, 1968, 26495/68
Int. Cl. H01j 29/76
U.S. Cl. 315—21 14 Claims



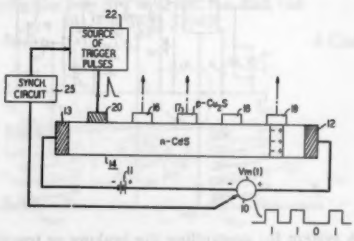
A cathode-ray tube is provided for use in apparatus for totalizing or averaging time-varying signals. The tube has a number of discrete conductive elements coupled to capacitors, and the capacitors are charged, while the elements are scanned by the electron beam of the tube, to an amount dependent on the instantaneous value of an applied signal to be averaged or totalized. One electrode of each capacitor may be one of the elements. The beam may be deflected on and off a collector electrode to control the charging of the capacitors. Readout is by finding the charge on the capacitors after the signal has been applied a plurality of times, and may be by voltage or current sampling.

3,584,927
BIOLOGY STUDY ENCLOSURE
Donald E. Ott, and Arthur W. Carlson, both of Muskegon, Mich., assignors to E. H. Sheldon & Company, Muskegon, Mich.
Filed July 10, 1969, Ser. No. 840,766
Int. Cl. A47f 3/14; A01g 31/02
U.S. Cl. 312—126 4 Claims



An enclosure for the study of biology including a generally rectangular casing having a front access door, a space at the bottom of the enclosure arranged to receive a fan or cooling unit, with air therefrom being delivered through vertical ducts at the enclosure sides, the enclosure also being suitable for photoperiodic use by virtue of having fluorescent lights therein at different levels arranged to deliver light in different spectral ranges.

3,584,928
SOLID STATE DISPLAY DEVICE
Richard B. Robruck, II, Matawan Township, Monmouth County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed July 1, 1969, Ser. No. 838,179
Int. Cl. H05b 37/00
U.S. Cl. 315—169 2 Claims



Light emitting *p-n* junctions are formed by depositing *p*-type Cu_2S along a sample of *n*-type CdS, the latter having an anode and a cathode and a third terminal adjacent to the

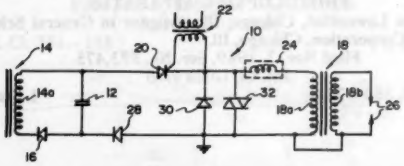
cathode. A DC bias voltage is connected in series with a digital-modulating signal and placed across the anode and the cathode of the CdS crystal. A positive trigger pulse, synchronized with the modulating signal, is applied to the third terminal and serves to nucleate an acoustic domain which propagates from cathode to anode. The voltage across the propagating domain is controlled by the digital-modulating signal applied to the device, and as the domain passes under a *p-n* junction light is emitted by the junction if at that instant the voltage across the domain exceeds a given threshold. Suitable light sensitive storage apparatus may be placed adjacent to each junction thereby permitting rapid storage of the digital signal.

3,584,929

SPARK DURATION FOR CAPACITOR DISCHARGE IGNITION SYSTEMS

Gunter G. Schuette, Addison, Ill., assignor to Motorola Inc., Franklin Park, Ill.

Filed Dec. 29, 1969, Ser. No. 888,782
Int. Cl. H05b *41/14*
U.S. Cl. 315—244 **7 Claims**



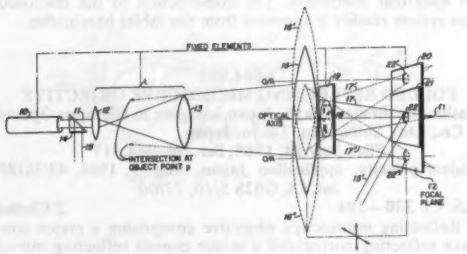
A capacitor discharge ignition system wherein an energy storage capacitor is charged to a relatively high voltage and synchronously discharged into the primary winding of an ignition coil to develop a high-energy short-time duration spark discharge at the secondary winding of the ignition coil, and a circuit is provided for increasing the time duration of the spark discharge beyond that normally obtained from the capacitor discharge system to improve the fuel-igniting properties of the spark.

3,584,930

HOLOGRAM-WRITING APPARATUS PROVIDING PRECISE TRACKING OF A DEFOCUSED WRITE BEAM

James B. Reed Jr., Naperville, Ill., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed June 26, 1969, Ser. No. 836,833
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **1 Claim**



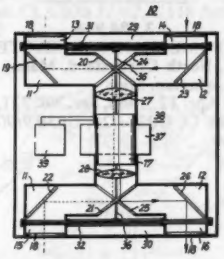
A hologram-writing apparatus for an optical memory in which a defocused write beam is employed in conjunction with a reference beam to create an interference pattern and a divergent (rather than a collimated) light beam is applied to the writing lens to permit simultaneous movement of the latter lens and the hologram aperture. Precise tracking of the write beam and aperture are ensured.

3,584,931

BINOCULAR VIEWING INSTRUMENT

Uwe Doring, Hamburg, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Nov. 4, 1968, Ser. No. 773,197
Claims priority, application Germany, Nov. 2, 1967, P 15 72 727.2
Int. Cl. G02b *21/20*
U.S. Cl. 350—36 **13 Claims**



Binocular viewing instrument having two viewing channels including two light entry apertures and two light exit apertures. Arranged near the entry and exit apertures, respectively, are reflecting surfaces which direct beams of light from each respective entry aperture to a corresponding exit aperture. Between the reflecting surfaces are provided an objective lens, a common image converter and/or an image amplifier for both viewing channels having a greater persistence than the human eye, and an ocular lens. The beams of light for both viewing channels are passed through each of these elements. Also, near the light entry and exit apertures are located shutter devices for each viewing channel. The entry and exit shutter devices are coupled to coact with one another and are constructed to alternatingly open one viewing channel and close the other at a frequency greater than the critical flicker frequency of the human eye upon commands received from a control means. By this arrangement, human eyes are provided with a total and stereoscopic image.

3,584,932

ALUMINOUS METAL WITH GLASS BEADS BONDED THERETO

James R. Terrill, Natrona Heights, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Division of Ser. No. 628,549, April 5, 1967, Patent No. 3,477,118. Filed June 27, 1969, Ser. No. 837,343
Int. Cl. G02b *5/12*
U.S. Cl. 350—105 **3 Claims**

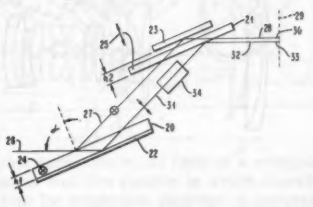
A reflective composite having glass beads bonded to an aluminous metal substrate by a fused alloy containing aluminum, silicon and magnesium.

3,584,933

LIGHT DEFLECTION APPARATUS

Millard A. Habegger, and James Lipp, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 7, 1969, Ser. No. 814,240
Int. Cl. G02f *3/00*
U.S. Cl. 350—150 **11 Claims**



Light deflection apparatus for selectively deflecting a beam of light from a source to any one of a plurality of discrete

positions on a target is provided. Operative under electro-optic control, the apparatus is of the external reflecting type. A light beam propagated as a set of extraordinary rays never enters the light deflecting birefringent element but is reflected on incidence at it. Astigmatic aberrations in the possible output beams are avoided, pathlength compensation between the two possible output beams of a deflecting stage is achieved, and a diffraction limited spot of light is provided as the output beam.

3,584,934

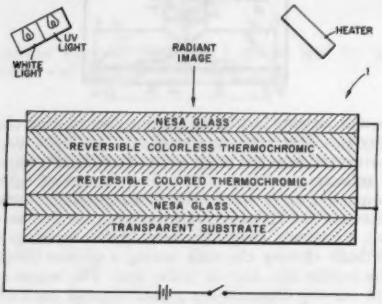
NON-MECHANICAL SHUTTER

Hollis E. French, North Chelmsford, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Apr. 12, 1968, Ser. No. 721,045

Int. Cl. G02f 1/28; G03b 9/00

U.S. Cl. 350—160 **24 Claims**



This invention relates to a nonmechanical shutter for a camera or similar device. The shutter is comprised of a transparent substrate, the color form of a compound which is thermally rendered colorless and the colorless form of a compound which is thermally rendered colored. The change of the colored compound to colorless form occurs prior to the change of colorless compound to colored form with the lapse of a finite period of time between these color changes. During this time period, the shutter is substantially light transparent, i.e. the shutter is in the open position. Thus when used in a camera, heating of the shutter renders the shutter transparent and permits exposure of the photosensitive medium of the camera. The time of exposure is determined by the combination of thermochromic substances in the shutter. The shutter is "cocked" after use by allowing the thermochromic change to reverse itself, or, when the thermochromic substances are also photochromic, by exposure to light which reverses the thermochromic color change, e.g. ultraviolet and visible light.

3,584,935

WIDE ANGLE ZOOM OBJECTIVE LENS SYSTEM

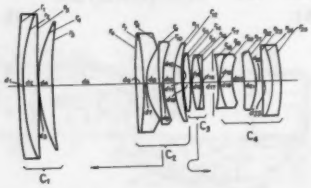
Tadashi Kojima, Tokyo, Japan, assignor to Konishiroku Photo Industry Co., Ltd.

Filed May 27, 1969, Ser. No. 828,257

Claims priority, application Japan, June 3, 1968, 43/37500

Int. Cl. G02b 15/14, 9/34

U.S. Cl. 350—184 **1 Claim**



A wide angle zoom objective for all purposes comprising four lens components, of which first three components constitute a variable magnification system and the fourth constitutes a relay system. The second lens component which is movable is chosen negative, while other components are positive. Each of the first to third components includes a cemented lens of same sign as the lens component to which it belongs, and such cemented lens has a cemented surface of refractive power which is of the opposite sign to that of the lens component in which it is included. The focal lengths of the first to third lens components must be within specified range. The first and third components each comprises more than one positive lens group, and the second component includes more than one negative lens group and one positive lens group disposed rearmost from the front of the objective with a relatively large spacing from the negative lens groups thereof. The cemented surfaces in the first and second components are convex and concave, respectively, to the front of the objective. The cemented surfaces in the first to third lens components must have refractive power within specified limits. As to the second component, the spacing between the negative and positive groups, the focal length of the positive lens group and the radius of curvature of foremost surface in the positive group are within specified limits.

3,584,936

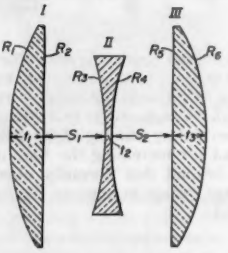
SYMMETRICAL TRIPLET LENS SYSTEM FOR PHOTOCOPYING APPARATUS

Herman Lowenthal, Chicago, Ill., assignor to General Scientific Corporation, Chicago, Ill.

Filed Nov. 3, 1969, Ser. No. 873,475

Int. Cl. G02b 9/16

U.S. Cl. 350—226 **1 Claim**



A symmetrical triplet lens system for photocopying apparatus characterized by the use of low cost materials and low cost steps in manufacturing. The two outside lens elements have a like index of refraction falling in the range from 1.59 to 1.63, and the inside lens element has an index of refraction falling in the range from 1.58 to 1.62. The lens system is designed primarily for 1 to 1 magnification, and is substantially free of coma, distortion and chromatic difference of magnification. The system also is well corrected for spherical aberration. The construction of the disclosed lens system readily is apparent from the tables hereinafter.

3,584,937

FOLDED REFLECTING MICROSCOPE OBJECTIVE

Yoshio Nishimoto, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Shibuyaku, Tokyo, Japan

Filed July 24, 1969, Ser. No. 844,317

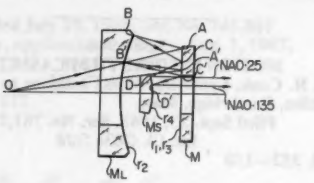
Claims priority, application Japan, Aug. 9, 1968, 43/56185

Int. Cl. G02b 5/10, 17/00

U.S. Cl. 350—294 **2 Claims**

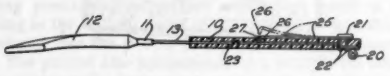
Reflecting microscope objective comprising a major concave reflecting mirror and a minor convex reflecting mirror coaxially located in spaced relation therefrom so that the light from an object is reflected by the major concave reflecting mirror toward the minor convex reflecting mirror to be again reflected thereby toward means such as eyepiece means of a microscope on which the reflecting microscope objective is mounted. A plane reflecting mirror is provided rearwardly of the minor convex reflecting mirror in spaced relation therefrom and the major concave reflecting mirror is located at the object side with respect to the plane reflecting mirror so that the light from the object is first received by the

plane reflecting mirror so as to be reflected toward the major concave reflecting mirror, the light received thereby being again reflected toward the plane reflecting mirror which in



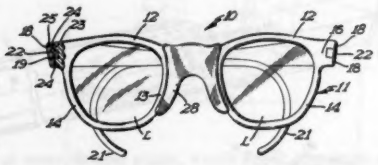
turn reflects the thus received light to the minor convex reflecting mirror so as to be reflected toward means such as the eyepiece means.

3,584,938
ADJUSTABLE LENGTH TEMPLES
Frank W. Lindblom, Warwick, R.I., assignor to Welsh Manufacturing Company
Filed July 8, 1969, Ser. No. 839,858
Int. Cl. G02c *5/20*
U.S. Cl. 351—118 **2 Claims**



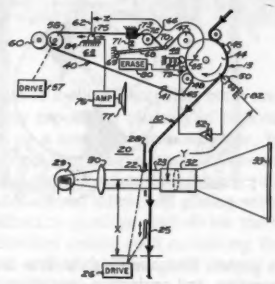
An adjustable temple bar for eyeglass frames that comprises two members, one member telescoping into the other member and in which the rear member is provided with a plurality of spaced apertures therein one of which is selectively engaged by a pin that is mounted on a flat spring attached to the forward member which pin passes through an opening in the outer wall of the forward member of the temple bar into an aperture in the rear member that telescopes within the outer member. By such a construction the temples may be selectively adjusted easily and quickly by the user to fit his head.

3,584,939
ATHLETIC SPECTACLES
Marshall S. Olson, Minneapolis, Minn., and Raymond D. Criss, Augusta, Kans., assignors to N. P. Benson Optical Company, Minneapolis, Minn.
Filed May 7, 1969, Ser. No. 822,364
Int. Cl. G02c *5/12*
U.S. Cl. 351—132 **2 Claims**



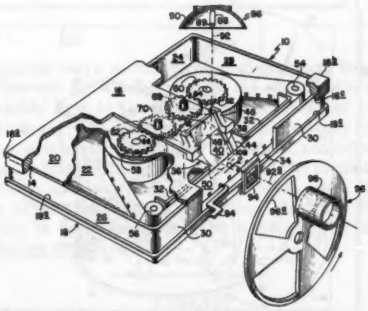
Athletic spectacles include a plastic spectacle frame which is comprised of a pair of angular lens supports which are interconnected by a bridge member. The nasal side of each lens support is provided with loops which serve to anchor a soft resilient arch which encases the bridge member and extends partially around the nasal side of each lens support. A pair of temples are provided and are pivotally connected to the spectacle frames to prevent pivotal movement of the temples through an arc of approximately 180°. The provision of the arch and the pivotal connection of the temples to the spectacle frames minimizes the occurrence of injury to a user and damage to the spectacles.

3,584,940
APPARATUS FOR REPRODUCING SOUND FROM MOTION PICTURE FILM
James U. Lemke, Del Mar, Calif., assignor to Bell & Howell Company, Chicago, Ill.
Filed Oct. 31, 1968, Ser. No. 772,183
Int. Cl. G03b *31/02;* **G11b** *5/86*
U.S. Cl. 352—12 **14 Claims**



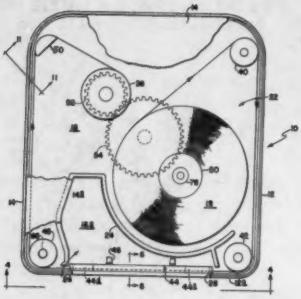
Apparatus for reproducing sound information from a sound track of an intermittently advancing motion picture film include an erasable sound recording medium. The sound information is copied from the sound track onto the recording medium while the motion picture film and the recording medium are intermittently advancing. The recording medium with the copied sound information is then continuously advanced and the copied sound information is reproduced from the continuously advanced recording medium.

3,584,941
FILM CASSETTE AND PROJECTOR HAVING INTERDEPENDENT OPTICAL COMPONENTS
Rogers B. Downey, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Jan. 28, 1969, Ser. No. 794,728
Int. Cl. G03b *23/02*
U.S. Cl. 352—78 **12 Claims**



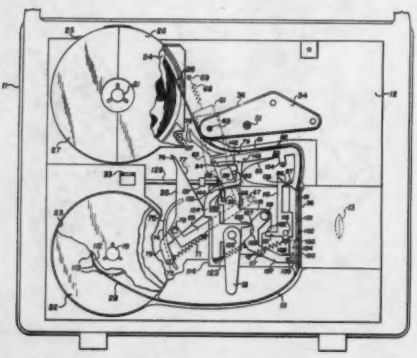
Photographic apparatus in the form of a compact motion-picture projector and film cassette in which overall illumination of the film for projection purposes is cooperatively assumed by components of both the projector and cassette to enable maximum use of a relatively large effective aperture of the projection optics.

3,584,942
MOVING-PICTURE CASSETTE
Rogers B. Downey, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Dec. 12, 1968, Ser. No. 783,242
Int. Cl. G03b 23/06
U.S. Cl. 352—78 10 Claims



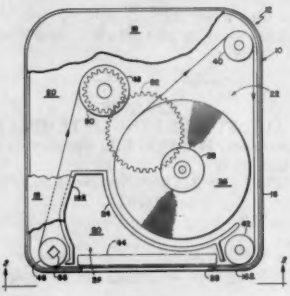
A motion picture film handling cassette useful in film exposure, processing, and projection operations. An unexposed strip of photographic material is initially coiled within an opaque housing and adapted to be reversibly advanced therewithin along a guide path, defined in part by a roller mounted for free rotation and a pair of spaced apart film-contacting segments extending in registry from opposed sidewalls of the cassette, and across a film gate and a normally inoperative processing station. The film strip includes a narrow portion which, when aligned with the film-contacting segments, effects disengagement of the film strip therefrom, and an arrangement is included for selectively restraining rotation of the roller during film advance responsive to operation of an externally mounted member.

3,584,943
SELF-THREADING MOTION PICTURE PROJECTOR OR THE LIKE
Robert J. Roman, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 31, 1968, Ser. No. 772,165
Int. Cl. G03b 23/12, 1/58
U.S. Cl. 352—124 10 Claims



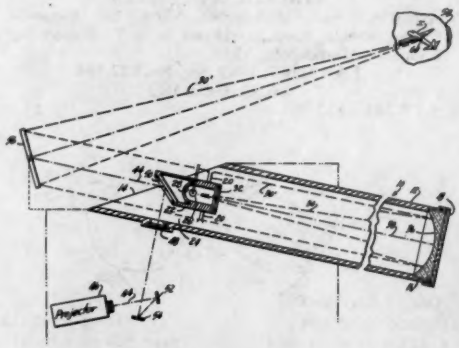
A self-threading motion picture projector is adapted to perform different functions as film is threaded, projected, partially rewound to repeat selected film sequences and automatically rewound after the entire length of available film has been displayed. A completely mechanical system includes a pivotally mounted finger for stripping the end of a carrier from the supply reel while the reel is being driven on its periphery by a pivotally mounted belt assembly. A lever actuated by an operator initiates operation of the device through interlocking and latching means to perform its above stated functions.

3,584,944
MOTION PICTURE FILM CASSETTE
Gerald H. Cook, Lynnfield, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Sept. 23, 1968, Ser. No. 761,756
Int. Cl. G03c 5/28
U.S. Cl. 352—130 8 Claims



A film cassette or magazine for use both in a moving-picture camera and projector. The cassette is employed in a plurality of operations, namely, in performing the photographic exposure, in rapidly processing an exposed length of motion-picture film especially adapted to the purpose, and, immediately following the processing step, in projecting the film sequence for viewing purposes.

3,584,945
INFRARED GENERATOR AND MIXER
Jon R. Berry, Lutherville, Md., assignor to The United States of America as represented by the Secretary of the Navy.
Filed Mar. 11, 1969, Ser. No. 806,225
Int. Cl. G03b 21/28
U.S. Cl. 353—37 2 Claims



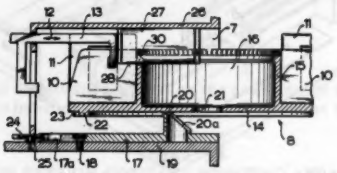
Apparatus for generating and forming a converging infrared beam and mixing it with a diverging, visible image forming beam, the apparatus comprising in combination an infrared emitter, infrared collecting and imaging optical means, and mixer means comprising visible image forming beam reflecting mirror means disposed on the axis of the infrared beam and of a size permitting the infrared beam to pass around the mixer means.

3,584,946

SLIDE PROJECTOR AND SLIDE TRAY THEREFOR

Helmut Rube, Endersbach, Germany, assignor to Robert Bosch Photokino GmbH, Stuttgart-Unterturkheim, Germany

Filed July 18, 1968, Ser. No. 745,801
Claims priority, application Germany, Aug. 3, 1967, P 15 72 581.2
Int. Cl. G03b *23/06*
U.S. Cl. 353—117 9 Claims



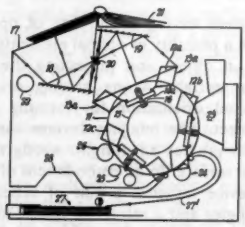
The housing of a slide projector is provided with a pocket for reception of a circular slide tray which is indexible about a vertical axis. The pocket accommodates an upwardly extending positioning projection which can enter a central opening in the bottom panel of the tray only when the tray is introduced into the pocket in a predetermined angular position. The pocket also accommodates a straight rib which extends downwardly from a top wall of the housing and can enter a radial slot of the tray when the latter is held in predetermined angular position and is moved into the pocket with its bottom panel located in a plane above the tip of the projection.

3,584,947

ELECTROSTATOGRAPHIC APPARATUS

Nandor Mihalik, Walton-on-Thames, England, assignor to Sperry Rand Corporation, NY, N.Y.

Filed Nov. 6, 1968, Ser. No. 773,873
Claims priority, application Great Britain, Nov. 9, 1967, Sept. 6, 1968, 51123/67;42384/68
Int. Cl. G03g *15/04*
U.S. Cl. 355—16 19 Claims



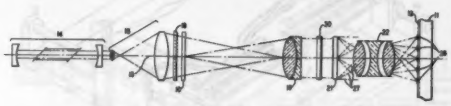
One or more flexible plates, which either constitute, or are arranged to receive and support, electrostatographic sheets on which an electrostatic latent image can be formed and developed, are held by mountings in curved condition on a suitably shaped support member and moved round a circular path past each in sequence of a plurality of processing stations, of an electrostatographic apparatus. The plate mountings, preferably constituted by linkage mechanisms, are actuated to lift each flexible plate from the support member into a flat condition and to present each flexible plate in such flat condition at the exposure station before wrapping it again round the support member for continued movement round said circular path.

3,584,948

APPARATUS AND METHOD FOR PRODUCING MULTIPLE IMAGES

Donald R. Herriott, Morris Township, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 24, 1968, Ser. No. 739,327
Int. Cl. G03b *27/32*
U.S. Cl. 355—77 5 Claims



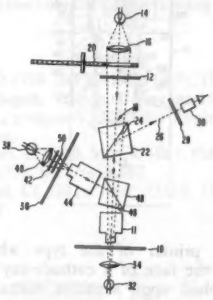
Multiple images of a photolithography mask are produced, for simultaneously exposing a plurality of regions of a photoresist coating on a semiconductor substrate, by directing monochromatic light through the mask, collimating the light, and transmitting it through a first diffraction grating with vertical rulings and a second diffraction grating with horizontal rulings. The diffraction gratings each divide the light into a plurality of diffraction orders each containing the image to be recorded; and each of these images is imaged on the photoresist coating.

3,584,949

OPTICAL COMPUTING APPARATUS AND METHOD

Richard G. Clow, 2018 W. Flower St., Phoenix, Ariz.

Filed Dec. 4, 1968, Ser. No. 781,182
Int. Cl. G03b *27/70, 27/76*
U.S. Cl. 355—45 10 Claims



Apparatus and a method of recording optical images on a photochromic microfiche, wherein the recording is achieved with visible light to permit image positioning of extremely high accuracy. The system can be used not only to record data on a microfiche but also to correct recording errors thereon, to transfer data from one microfiche to another, and to perform computations on a microfiche where the complexity of the computation is not too great and the same operation is to be performed on a plurality of data bits recorded on the microfiche.

3,584,950

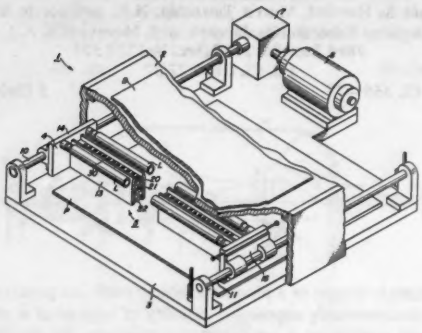
LENS STRIP OPTICAL SCANNING SYSTEM

Robert W. Gundlach, Victor, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Continuation of application Ser. No. 569,312, Aug. 1, 1966, now abandoned. This application Nov. 17, 1967, Ser. No. 683,837
Int. Cl. G03b *27/50*
U.S. Cl. 355—50 10 Claims

An optical system having a plurality of optical imaging devices each comprising a plurality of refracting lens ele-

ments to receive light rays from an object and project them toward an image plane forming a continuous image of the object thereon. The imaging devices can scan portions of the object to project them toward the image surface forming a continuous image of the scanned object thereon.

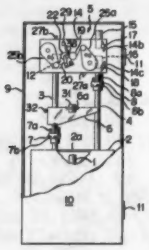


3,584,951

PHOTOGRAPHY MAGNIFICATION CHANGING DEVICE FOR USE WITH IMAGE PRINTER

Sakae Fujimoto, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Dec. 19, 1968, Ser. No. 785,260
Claims priority, application Japan, Dec. 26, 1967, 42/108816
Int. Cl. G03b *21/08*
U.S. Cl. 355—63 **3 Claims**



In an image printer of the type wherein the image produced upon the face of a cathode-ray tube are sequentially photographed upon sensitive matter, a photography magnification changing device is provided in which one side edge of an image printer is carried by one of two guide rods in such a manner that said image printer is rotatable about a journal attached to said one guide rod in a plane parallel with the plane including said two guide rods. A lens stand is slidably carried by one of said two guide rods, and said two guide rods each include stopper stands provided with a plurality of stopper pins each having a different length such that said image printer as well as said lens stand may be supported whereby the inclination of said image printer or the position of said lens stand is changed, thereby changing the magnification of a image to be photographed.

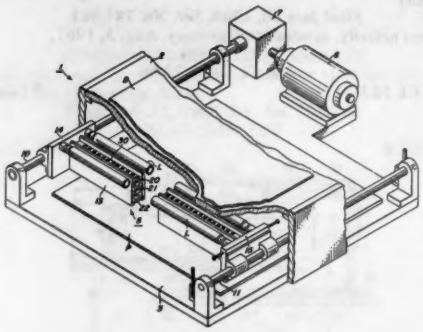
3,584,952

LENS STRIP OPTICAL SCANNING SYSTEM

Robert W. Gundlach, Victor, N.Y.; Howard C. Davis, and Henry E. Hull, both of Columbus, Ohio, assignors to Xerox Corporation, Rochester, N.Y.

Continuation of application Ser. No. 568,925, July 29, 1966, now abandoned. This application Nov. 17, 1967, Ser. No. 683,987
Int. Cl. G03b *27/50*
U.S. Cl. 355—52 **13 Claims**

An optical system having a plurality of optical imaging devices each comprising a plurality of refracting lens elements to receive light rays from an object and project them toward an image plane in an overlapping manner, forming a continuous image. on the object thereon. The imaging devices can scan portions of the object to project them toward the image surface forming a continuous image of the scanned object thereon.

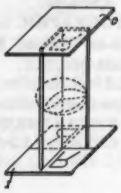


3,584,953

SHORT FOCAL OPTICAL LENGTH SCANNING SYSTEM

Osmar Alexander Ullrich, Jr., Columbus, Ohio, assignor to Xerox Corporation, Rochester, N.Y.

Continuation-in-part of application Ser. No. 569,311, Aug. 1, 1966, now abandoned. This application Nov. 17, 1967, Ser. No. 683,988
Int. Cl. G03b *27/70*
U.S. Cl. 355—66 **8 Claims**



An optical system having a plurality of optical imaging devices each with a plurality of optical elements for receiving light rays from an object and projecting them toward an image surface in upright, wrong reading orientation with respect to received orientation for forming a continuous image of the object. The imaging devices can be made to scan an object to project an upright, wrong reading image toward the image surface. In an embodiment of the invention each imaging device includes a pair of reflective surfaces joined at right angles and a refractive lens element arranged in a plane normal to both surfaces. In another embodiment each imaging device includes a refractive element and a porroprism to achieve the desired results.

3,584,954

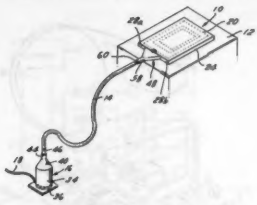
VACUUM ENLARGER EASEL

Robert Nast, 942 Glenridge Ave., North Woodmere, N.Y.

Filed Nov. 18, 1968, Ser. No. 776,334
Int. Cl. G03b *27/60*
U.S. Cl. 355—73 **3 Claims**

A photographic enlarger easel for mounting photographic enlarging paper thereon by means of a vacuum created within the easel. Individual air chambers within the easel are arranged to underlie enlarging papers of varying sizes, and

means are provided to selectively limit the vacuum condition to those chambers which underlie the paper size in use.



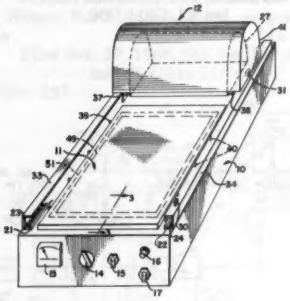
Tapered outlets are provided on the easel and on the vacuum pump to increase the vacuum pressure within the easel.

3,584,955

HIGH ENERGY CONTACT PRINTING APPARATUS

Emile Frans Stievenart, Antwerpen; Luc Yves Natens, Berchem, and Marcel Nicolas Vrancken, Hove, all of, Belgium

Filed June 20, 1968, Ser. No. 738,625
Claims priority, application Great Britain, June 20, 1967, 28,467/67
Int. Cl. G03b *27/10*
U.S. Cl. 355—84 **11 Claims**



High energy exposure apparatus for copying material of the type developing on exposure to sufficient heat a latent image irreversibly differentiated in a physical property, such as solvent solubility, from the nonimage areas, which apparatus is of the flat bed with an exposure unit travelling between the ends of the bed. A gas discharge tube is provided in the exposure unit which includes shielding means confining the illumination of the tube to only a portion of the length of the bed, and the tube is flashed at consecutive points of its travel in at least one direction over the bed in order to obtain multiple overlapping exposures along the bed. Preferably, the gas discharge tube is flashed in both directions of its travel, the timing of the flashes in one direction being out of phase with the timing of the flashes in the other direction.

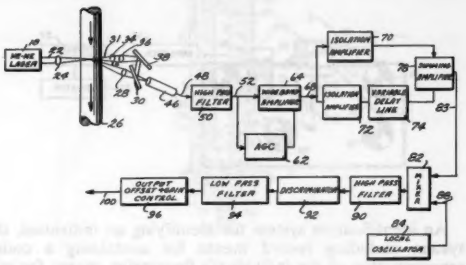
3,584,956

LASER ANEMOMETER FREQUENCY TO VOLTAGE CONVERTERS

Robin H. Hines; John I. Shipp, and Richard G. Ray, all of Tullahoma, Tenn., assignors to Laser Systems and Electronics, Inc., Tullahoma, Tenn.

Filed Oct. 23, 1968, Ser. No. 770,038
Int. Cl. G01p *3/36*
U.S. Cl. 356—28 **18 Claims**

A frequency to voltage converter for use with a laser velocity measuring system whereby a laser beam is passed through a flowing media, and a portion of the Doppler shifted beam is optically combined with the nonshifted beam to produce a fixed homodyne signal which is then applied to a photodetector to produce a modulated electrical signal. This modulated electrical signal is then passed through a high pass filter and a wide band amplifier having automatic gain control to each of two isolation amplifiers, one of which applies its signal to a summing amplifier directly, while the other amplifier applies its signal through a variable delay line to the summing amplifier to ensure that a continuous output



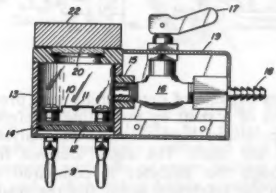
signal will be produced. The output of the summing amplifier is then applied to a mixer along with the output of a local oscillator so that another modulated signal having a frequency greater than the frequency of the combined optical signal is produced which is then passed through a high pass filter to a discriminator. The output of the discriminator is then filtered through a low-pass filter and applied to an offset and gain control circuit to produce an output voltage which varies directly with the velocity of the flowing media.

3,584,957

METHOD FOR INFRARED SPECTROSCOPY

Stanley E. Polchlopek, Wilton, Conn., and Robert L. Harris, Freeport, N.Y., assignors to Barnes Engineering Company, Stamford, Conn.

Division of Ser. No. 453,030, May 4, 1965, Patent No. 3,508,836. Filed Jan. 26, 1970, Ser. No. 5,687
Int. Cl. G01n *1/00, 33/28, 1/10*
U.S. Cl. 356—38 **2 Claims**



A process and apparatus for obtaining nongaseous pyrolyzate samples of materials for infrared analysis is described. The collecting devices or cells for nongaseous pyrolyzates which at ordinary temperature may be liquid or partially solid are provided with a heat ribbon having a depression to take the pyrolysis sample and a cover with a hermetically sealable opening taking a pyrolyzate plate which may be an attenuated total reflection plate, one side being exposed to the pyrolysis vapors on the inside and the other coolable. The heater is connectable to a power source and the cell to a source of vacuum with a valve which can be shut after pyrolysis is complete to maintain the vacuum.

3,584,958

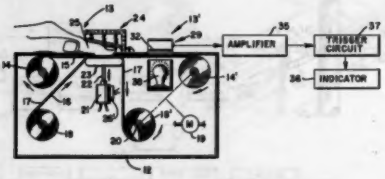
IDENTIFICATION SYSTEM

Marvin Miller, Teaneck, N.J.; Robert P. Miller, Spring Valley, N.Y., and Tibor De Cholnoky, Jr., Greenwich, Conn., assignors to Indentimation Corporation, Northvale, N.J.

Continuation-in-part of application Ser. No. 453,440, May 5, 1965, now abandoned. This application Sept. 13, 1968, Ser. No. 759,698

Int. Cl. G06k 9/08

U.S. Cl. 356—71 29 Claims



An identification system for identifying an individual, the system including record means for containing a coded representation of the individual's fingerprint, means for taking the individual's fingerprint at the time an identification is to be made, comparison means for comparing the two fingerprints, and indicating means for indicating an identity or lack of identity between the two fingerprints.

3,584,959

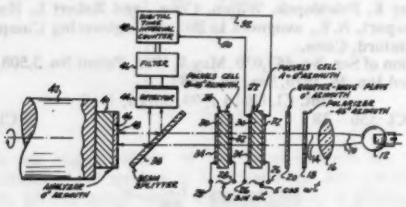
SHAFT POSITION ENCODERS

Carlo Del Carlo, Utica, and James M. McMenamin, Livonia, both of, Mich., assignors to Teeg Research, Inc., Detroit, Mich.

Continuation-in-part of application Ser. No. 472,402, July 13, 1965. This application Feb. 23, 1967, Ser. No. 617,967

Int. Cl. G03b 27/22

U.S. Cl. 356—117 17 Claims



Instruments capable of determining with precision the angular position of a shaft by projecting a reference beam of modulated polarized light through an analyzer rotating in unison with the shaft. The signal derived from the light passing through the analyzer is compared to the signal derived from the reference beam and the resultant signal is representative of the shaft angular position.

3,584,960

APPARATUS FOR THE RELATIVE POSITIONING OF TWO PLANE PARTS

Nathalie Seailles, Paris, France, assignor to Societe Lignes Telegraphiques Et Telephoniques, Paris, France

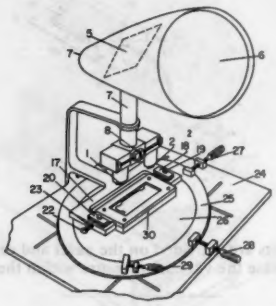
Filed Nov. 29, 1968, Ser. No. 779,792

Claims priority, application France, Dec. 13, 1967, 131,999

Int. Cl. G01b 9/08

U.S. Cl. 356—164 4 Claims

Registration of the first planar part is achieved with respect to a test specimen carried by a component holder which is provided with foolproof positioning device for the second planar part. The first planar part is fastened to the component holder, the test specimen is removed and may be replaced by a second part. According to an important feature of the invention, registration of the first planar with the test specimen is monitored through visual inspection of an enlarged display of optical marks carried both by the first part and the test specimen.



3,584,961

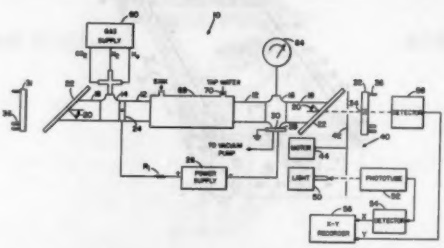
DEVICE FOR MEASURING GAIN RELAXATION RATE OF A LASER

Charles M. Cason, III; James F. Perkins, and Herbert C. Ruge, all of Huntsville, Ala.

Filed Jan. 8, 1969, Ser. No. 789,695

Int. Cl. G01j 1/00

U.S. Cl. 356—213 6 Claims



A method for measuring the gain relaxation rate of a laser. A laser cavity is periodically interrupted by a rotating chopper wheel to induce loss modulation. A slow response detector measures the modulated laser output and feeds the indication thereof to a chart recorder. The frequency of modulation or chopper wheel rate is simultaneously fed to the recorder. A curve is taken of the laser output power compared to the frequency of laser modulation. Fitting the power data curve to a curve determined theoretically for relative efficiency yields a gain relaxation rate that is unique to the particular laser and optical cavity.

3,584,962

DIGITAL LIGHT METER COMPRISING PLURAL LIGHT ACTIVATED DEVICES BIASED TO BECOME CONDUCTING AT DIFFERENT ILLUMINATION LEVELS

Edgar L. Irwin, Glen Burnie, and Pieter De Wit, Baltimore, both of, Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

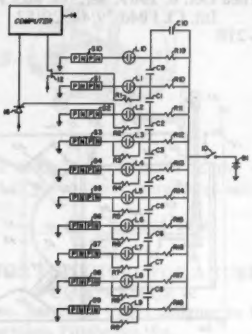
Filed Oct. 17, 1969, Ser. No. 867,211

Int. Cl. G01j 1/42, 1/44; H01j 39/12

U.S. Cl. 356—222 7 Claims

Described is a digital light meter formed from devices, such as silicon four-layer switches, each of which can be triggered into conduction by incident photons. The intensity of the photons necessary to trigger a switch into conduction is dependent upon the magnitude of a bias voltage applied across the device. By providing a plurality of switches, all exposed to the same source of incident light, and by biasing the

respective switches with progressively decreasing bias voltages, the number of switches triggered into conduction will increase as the light intensity increases. The invention additionally includes means for automatically terminating the flow of current through each switch when the intensity of the incident photons falls below the triggering level for that switch.

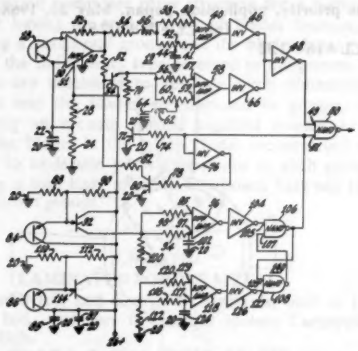


3,584,963

OPTICAL FLAW DETECTOR

Daniel A. Wisner, North Adams, Mich., assignor to RCA Corporation

Filed Dec. 27, 1968, Ser. No. 787,465
Int. Cl. G01n *21/16*
U.S. Cl. 356—237 6 Claims



A sudden or a gradual change in the reflectivity to a light beam of adjacent portions of a surface of an article may indicate a flaw in the surface. The article which is to be detected for flaws is scanned by observing a light beam which is reflected from the surface of the article. The scanning means in effect passes onto the surface at one edge thereof and passes off at the opposite edge. The sudden changes in reflectivity of the surface as the scanning means passes onto the surface or departs from it during scanning is prevented from acting to indicate a flaw or from causing a gradual change indicator to give a false indication of a flaw.

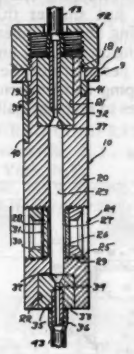
3,584,964

SPECTROPHOTOMETER, FLOW CELLS AND HOLDERS

Samuel Nejame, Jr., Medfield, Mass., assignor to International Equipment Company, Needham Heights, Mass.

Filed Dec. 15, 1967, Ser. No. 690,892
Int. Cl. G01n *21/16*
U.S. Cl. 356—244 2 Claims

Gradient analysis apparatus having a chamber provided with a light sensor and a light source directed at the sensor, a flow cell holder detachably supported in a predetermined position within the chamber, and a flow cell detachably held in a predetermined position by the holder and having a gradient passage intersected by a light beam with the gradient constituents being undisturbed in their passage through the light beam.

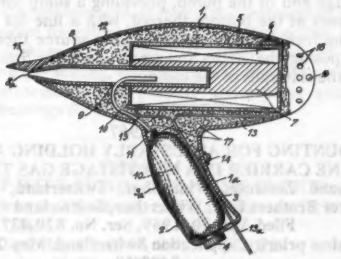


3,584,965

DEVICE FOR CLEANING GLASS OR LIKE SURFACES

Roger Chastanier, 11 bis rue Rouget de l'Isle, Asnieres, Hauts de Seine, France

Filed Aug. 5, 1969, Ser. No. 847,635
Claims priority, application France, Aug. 6, 1968, Mar. 24, 1969, 162.007;69.08544
Int. Cl. A47l *13/32*
U.S. Cl. 401—2 10 Claims



The handle of a window cleaning device has a opening through which a squeeze bottle for water protrudes. A vaporizing chamber is partially embedded in a heat conductive core associated with one or more heating elements and forms at one end a dispensing nozzle continuously open to ambient atmosphere. The squeeze bottle is adapted to dispense cleaning fluid such as water into the vaporizing chamber wherein it is vaporized and subsequently discharged as a high velocity vapor through the nozzle. A wiper blade is attached to the device adjacent the discharge nozzle to strike off the condensed vapor formed on a window or like surface for cleaning purposes.

3,584,966

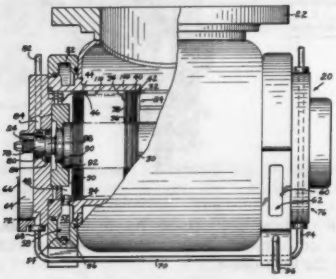
VACUUM PUMP CONSTRUCTION

Gordon E. Osterstrom, Winnetka, Ill., assignor to Sargent-Welch Scientific Company, Skokie, Ill.

Filed Oct. 27, 1969, Ser. No. 869,806
Int. Cl. F04b *19/16*, *19/18*; F01d *9/00*
U.S. Cl. 415—100 10 Claims

A vacuum pump having an improved stator support construction for preventing back flow from higher pressure to

lower sections thereof, and an improved oil control system for preventing back flow of oil vapors to low pressure regions of the pump. Undesired axial leakage past the stators is prevented by providing stator support rings of a split ring construction having overlapping end portions. The rings are sized to a diameter just smaller than the smallest inside dimension of the casing and are inherently resiliently biased outwardly for snug engagement by an outer face of the ring with the entire inner periphery of the casing. The axial gaps between the overlapping end portions cause any molecules leaking between stages to be principally directed downwardly



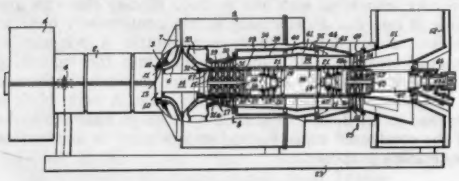
into the path of adjacent rotors for propulsion thereof downstream, rather than permitting leaking gas molecules to continue upstream along the inner surface of the casing. The open areas between overlapping sections are also spaced angularly apart from the openings in adjacent rings, to provide a labyrinthine path to prevent leakage. Further oil control is accomplished by providing an annular outlet casing in each discharge end of the pump, providing a sump for condensed oil vapors at the bottom thereof, with a line for connection with the fore pump or other vacuum source therefrom, and by disposing the outlet openings upwardly from the sump along the sidewalls of the casings.

3,584,967

MOUNTING FOR ADJUSTABLY HOLDING A GUIDE VANE CARRIER IN A MULTISTAGE GAS TURBINE

Ferdinand Zerlauth, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Apr. 30, 1969, Ser. No. 820,437
Claims priority, application Switzerland, May 20, 1968, 7490/68
Int. Cl. F01d *9/00, 25/26*
U.S. Cl. 415—137 **6 Claims**



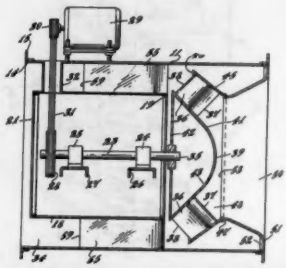
The guide vane carrier is slidably mounted by means of a flange in the groove of the turbine intermediate part while the eccentrically placed adjustable supports are mounted so as to effect a horizontal and/or vertical adjustment of the guide vane carrier on the intermediate part upon rotation of the eccentrically formed bolts.

3,584,968

FAN CONSTRUCTION

Mowry W. Keith, Los Angeles, Calif., assignor to Howard I. Furst, El Toro, Calif., a part interest

Filed Oct. 6, 1969, Ser. No. 863,975
Int. Cl. F04d *29/44, 29/52*
U.S. Cl. 415—210 **7 Claims**



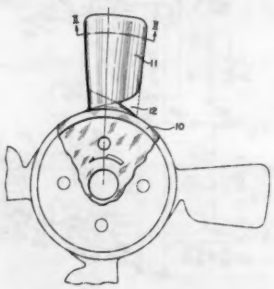
A fan construction uniquely combining axial and centrifugal fan structures having outer and inner cylinders defining an annular space therebetween, and a generally conoidal rotor providing a conoidal, bladed passageway having a central inlet and a peripheral output communicating with the annular space.

3,584,969

FLEXIBLE BLADE FAN

Shigeo Aiki; Uichiro Kobashi, and Masaharu Hayashi, all of Kariya-shi, Japan, assignors to Aisin Seiki Company Limited, Kariya-shi, Aichi-ken, Japan

Filed May 22, 1969, Ser. No. 826,843
Claims priority, application Japan, May 25, 1968, 43/35594
Int. Cl. F01d *5/28*
U.S. Cl. 416—132 **1 Claim**



A cooling fan assembly for powered vehicle, preferably adapted for automotive use, and having a boss and a plurality of radial fan blades made integral therewith of synthetic and resilient resin material, said assembly being characterized by the provision of a recess formed at the downstream area on each of said fan blades and in proximity of the root of the blade, thereby reducing the quantity of the delivery air with higher rotational speeds of the fan for avoiding an overcooling of the powering engine of said vehicle.

3,584,970

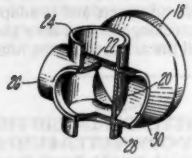
PROPELLER BARREL

Philip E. Barnes, North Granby, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Jan. 13, 1969, Ser. No. 790,702
Int. Cl. B64c *11/02*
U.S. Cl. 416—244 **3 Claims**

A novel propeller barrel is provided by a structure in which major centrifugal loads and bending moments are

reacted efficiently in tension or compression members, such as large-diameter, thin-section tubes, rather than inefficiently in bending members as in conventional propeller barrels. The



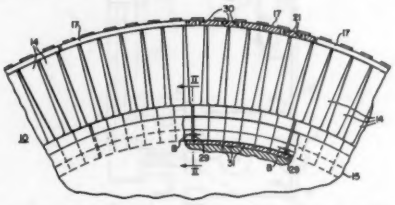
invention herein described was made in the course of or under a contract or subcontract thereunder with the Department of the Army.

3,584,971

BLADED ROTOR STRUCTURE FOR A TURBINE OR A COMPRESSOR

Ralph J. Ortolano, Saratoga, Calif., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 28, 1969, Ser. No. 828,553
Int. Cl. F01d *5/32*
U.S. Cl. 416—218 **5 Claims**



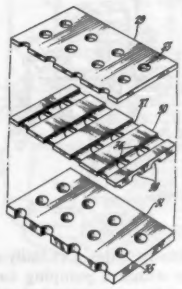
This invention comprises rotor structure for a turbine or compressor having an annular row of blades thereon, the rotor having a peripheral groove and the blades having root portions of the radial entry type received in the groove. The blade roots are machined to absolute pitch dimension or slightly less and the blades are disposed in groups, each group having an arcuate shroud segment riveted to the tenons of the blades in the group. Total accumulated deficiency due to undersize pitch dimensions in each group is made up by a thin liner member interposed between blade roots in adjacent groups.

3,584,972

LAMINATED POROUS METAL

Nick F. Bratkovich, and George B. Meginnis, both of Indianapolis, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 9, 1966, Ser. No. 526,207
Int. Cl. B64c *27/46*
U.S. Cl. 416—229 **27 Claims**



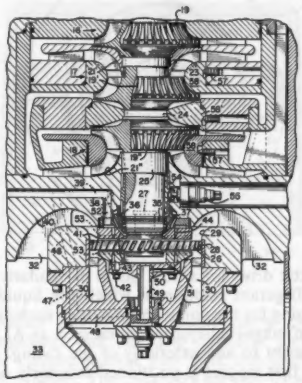
A sheet material of a controlled porous characteristic made up of two or more metal laminae bonded together, the laminae being photo etched or otherwise machined to define pores through the laminae and also passages between the abutting faces of the laminae. The passages may be spaces between bosses on the laminae or grooves in the faces of the laminae. The sheet may be formed into a turbine blade facing or other hot part of a gas turbine. In the case of a blade facing, the leading edge may have pores for direct discharge of film cooling air. The permeability to fluid flow may be varied over the area of the sheet.

3,584,973

MODULAR TURBO COMPRESSOR UNIT

Sotiris Lambiris, Lawrenceville, N.J., assignor to Ingersoll-Rand Company, New York, N.Y.

Filed Sept. 30, 1969, Ser. No. 862,391
Int. Cl. F04b *49/10, 17/00, 35/00*
U.S. Cl. 417—13 **18 Claims**



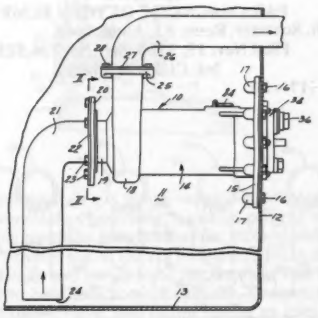
A turbine-compressor unit of modular construction, incorporating a cooler for intercooling and/or aftercooling, and a "packaged" system of a plurality of serially coupled units. The novel unit gas sealing, employing the very gaseous medium being compressed for this purpose, and deploys resiliently constrained bearings for the compressor shaft.

3,584,974

PUMP WITH AUTOMATIC PRIME DEVICE

Gerald A. Nicastro, Cleveland, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed May 27, 1969, Ser. No. 828,321
Int. Cl. F04d *9/00;* **F04b** *23/14*
U.S. Cl. 417—202 **11 Claims**



A motor-driven pump with a priming device which is automatically disengaged from the motor when the pump is

primed. In the preferred embodiment a submerged centrifugal booster pump and electric motor unit has a built-in hydroturbine priming pump driven by the motor through a spring biased clutch which is disengaged whenever the booster pump is primed and developing sufficient liquid pressure to overcome the spring bias on the clutch.

3,584,975
MAGNETIC DRIVE FOR A SOLUTION PUMP FOR ABSORPTION AIR CONDITIONER

Edwin H. Frohbieter, Stevensville, Mich., assignor to Whirlpool Corporation

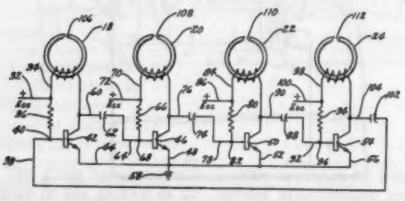
Filed Oct. 29, 1969, Ser. No. 872,128
Int. Cl. F16d *27/01*
U.S. Cl. 417—420 **4 Claims**

A magnetic drive for a fluid pump particularly adapted to pump a refrigerant solution in which the liquid circuit includes a casing for the pump and the drive including a rotatable block of magnetically hard metal such as ALNICO positioned adjacent to and exteriorly of the casing. A rotatable permanent first magnet is positioned exteriorly of the casing but adjacent the hard metal to provide a hysteresis coupling between the magnetically hard material and the first magnet. A rotatable permanent second magnet inside the casing is spaced from the first magnet to provide a synchronous coupling between the first and second magnets. Movable pump-operating means are attached to the second magnet for providing a fluid-pumping action on rotation of the second magnet. Drive means are provided for rotating the magnetically hard metal, thereby rotating said first magnet by reason of the hysteresis coupling and the second magnet by reason of the synchronous coupling between the two magnets. With this arrangement the magnetically hard metal and the first magnet may be located very close to each other for maximum strength of their coupling, while the two permanent magnets may be spaced further apart so that one may be located on the interior of the pump casing and the other on the exterior.

3,584,976
PARAMAGNETIC OXYGEN PUMP

Donald H. Schuster, Route #3, Ames, Iowa

Filed Nov. 18, 1968, Ser. No. 776,515
Int. Cl. H02k *45/00*
U.S. Cl. 417—50 **6 Claims**

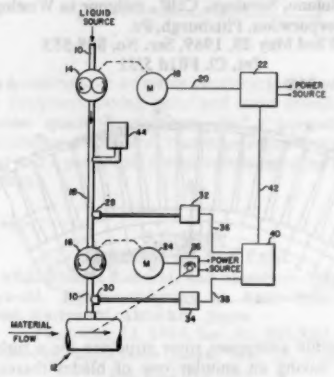


A paramagnetic oxygen pump including a housing having intake and discharge ends with a bore formed in the housing extending between the intake and discharge ends thereof. A plurality of spaced apart electromagnets extend into the housing and each have a magnetic gap positioned in the bore in the housing. An electronic control means is provided and is connected to the electromagnets and is adapted to successively energize the electromagnets to cause the electromagnets to magnetically pull the air through the housing.

3,584,977
PROCESS FOR METERING LIQUID THROUGH SERIALLY CONNECTED PUMPS

William Harold Coleman, II, Chadds Ford, Pa.; Bernard Landaff Matthews, Wilmington, Del., and Robert Bolton Mercer, Martinsville, Va., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 17, 1969, Ser. No. 816,996
Int. Cl. I04b *41/06, 49/00, 49/06*
U.S. Cl. 417—53 **3 Claims**

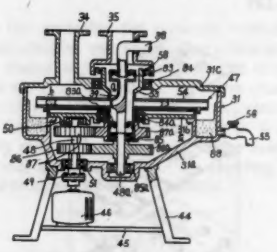


A process for metering liquid from a source into a material flowing through a vessel by means of two variable speed gear pumps serially connected between the source and the vessel wherein changes in differential pressure across the second gear pump are used to control the speed of the first gear pump to maintain uniform liquid metering.

3,584,978
PUMPING APPARATUS

Saburo Shimoi, Kyoto, Japan, assignor to Shimadzu Seisakusho, Ltd., Kyoto, Japan

Filed Nov. 25, 1968, Ser. No. 778,539
Int. Cl. F04f *11/00;* **F04b** *23/14*
U.S. Cl. 417—67 **3 Claims**



A pumping apparatus includes a radially extending rotary fluid passage member within a pumping casing. The rotary fluid passage member is communicated with low-pressure side within the casing through its inlet end and with high-pressure side within the casing through its outlet end. Liquid is intermittently supplied into the fluid passage member

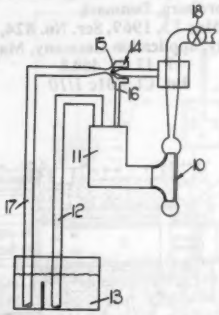
through the inlet end to form liquid partitions within the fluid passage member. The liquid partitions are driven radially outwardly through the fluid passage member under the centrifugal force produced by the rotation of the fluid passage member so as to positively transfer the fluid in the low-pressure side through the passage member into the high-pressure side, thus effecting pumping action.

3,584,979

SELF-PRIMING LIQUID-PUMPING SYSTEM

Michael Peter Jarrett, Bromsgrove, England, assignor to Joseph Lucas Industries Limited, Birmingham, England

Filed Apr. 23, 1969, Ser. No. 818,742
Int. Cl. F04d 9/00
U.S. Cl. 417—89 2 Claims



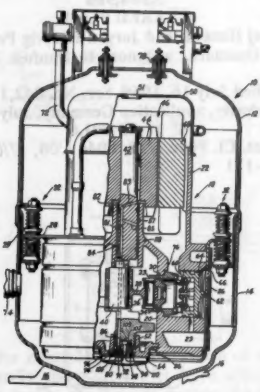
A self-priming liquid-pumping system has a main pump which draws liquid from a tank at a lower level and includes a priming reservoir above the main pump and which has a capacity larger than that of the piping between the main pump and the tank. A secondary pump may be provided to remove vapor from the reservoir. The system is primarily intended for use in the fuel system of a helicopter, in which a main centrifugal pump driven from the engine is preferable.

3,584,980

TWO-SPEED COMPRESSOR

Richard E. Cawley, Hurst, and Charles B. Ellis, Fort Worth, both of, Tex., assignors to Lennox Industries Inc.

Filed Jan. 31, 1969, Ser. No. 795,555
Int. Cl. F04b 39/02
U.S. Cl. 417—372 6 Claims



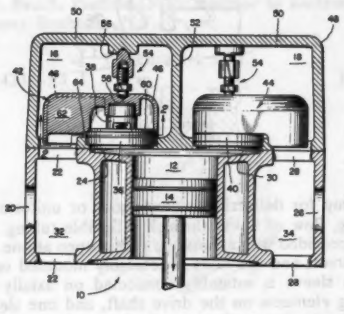
A refrigerant compressor having a two-speed compressor motor therein for driving a compression mechanism selectively at a relatively high speed and at a relatively low speed to effect capacity control. For example, a two-winding four-pole motor would, during two-pole operation, rotate at about 3,600 r.p.m., and during four-pole operation at about 1,800 r.p.m. A two-stage pump is provided for cooperating with the crankshaft to provide for adequate lubrication of the crankshaft bearing surfaces during both high-speed and low-speed operation of the compressor motor.

3,584,981

GAS COMPRESSOR

Arthur R. Worster, Painted Post, N.Y., assignor to Ingersoll-Rand Company, New York, N.Y.

Filed June 11, 1969, Ser. No. 832,179
Int. Cl. F04b 39/00; F16k 49/00
U.S. Cl. 417—542 16 Claims



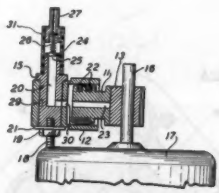
A compressor having a gas-compressing cylinder-and-piston arrangement with inlet and discharge plenum chambers in flow communication with inlet and discharge ports and with the cylinder. The chambers are side-by-side, sharing a common wall which wall radiates heat from the discharge plenum chamber into the inlet plenum chamber. Troughs are arranged in the chambers more positively to direct gas flow, especially away from the commonly shared wall and all other heat-radiating walls, to inhibit gas turbulence and to reduce preheating, thereby to enhance compressor efficiency.

3,584,982

GAS PUMP

Arthur D. Siegel, 22 Elston Road, Upper Montclair, N.J.

Filed Jan. 31, 1969, Ser. No. 795,555
Int. Cl. F04b 19/02, 29/00; F01b 15/04
U.S. Cl. 417—464 2 Claims



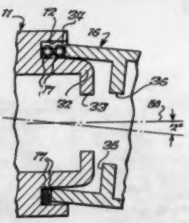
An air compressor or gas pump, especially adapted for use in aerating aquariums comprising, a piston, pivoted with "O" rings as sealing means in grooves therein, reciprocable in said cylinder, an exhaust valve for the cylinder, means to simultaneously oscillate and reciprocate the piston in said cylinder to cause gas to be drawn to said cylinder, compressed, and flow to said exhaust valve, said piston having an inlet passage to admit said gas to said cylinder, and the means to oscillate and reciprocate said piston is an eccentric having a flat on one side that uncovers the inlet passage in the piston at the beginning of the intake stroke and closes it at the end of said

intake stroke, forming a valve for said inlet passage, closing it during compression of gas and opening it during admission of gas to be compressed.

3,584,983
CONTINUOUS OUTPUT PUMP

Daniel T. Hindman, Kenmore, and Karl A. Baake, Angola, both of, N.Y., assignors to Mennen-Greatbatch Electronics, Inc., Clarance, N.Y.

Filed Nov. 3, 1969, Ser. No. 873,244
Int. Cl. F04b *43/08, 43/12;* **A61m** *5/00*
U.S. Cl. 417—476 **6 Claims**

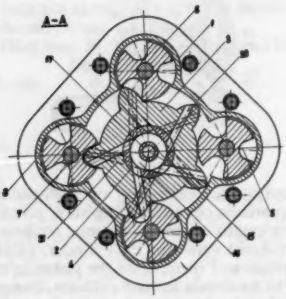


A pump for delivering a continuous or uniform i.e., not pulsating, flow of liquid through a flexible tubing. A pump body is provided with an annular recess open at one axial end face thereof, and the body is rotatably mounted on a drive shaft. A sleeve is rotatably connected on axially adjacent camming elements on the drive shaft, and one sleeve axial end face extends into the pump body annular recess. A flexible tubing enters the annular recess and extends therearound for a length greater than one circumferential length of the recess, in particular exiting from the body through the same opening through which it enters. One end of the tubing is connected to a source, for example a reservoir of anticoagulant liquid, and the other end to a load, such as a catheter inserted into the arm of a patient and operatively connected to a pressure transducer.

3,584,984
ROTARY DEVICE

Julian Franciszek Majkowski, Mila, and Zdzislaw Ryszard Przybylski, Polna, both of, Poland, assignors to Zaklady Mechanizzne "Tarrow," Tarnow, Kochanowskiego, Poland

Filed Jan. 23, 1969, Ser. No. 793,412
Claims priority, application Poland, Feb. 3, 1968, Mar. 1, 1968, P124892;P125557
Int. Cl. F01c *21/16, 1/20*
U.S. Cl. 418—28 **7 Claims**

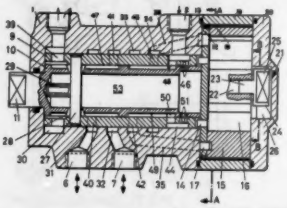


A rotary expansible chamber device having a casing of primarily circular cross section modified by peripherally spaced pockets of circular cross section; a rotary piston in the primary circular cross section of the casing has blades radially extending therefrom of epicycloidal shape, the tips of which are closely adjacent the primary surface of the casing. Cylindrical locks in each pocket are rotated synchronously with the piston and have recesses which receive the blade tips. Inlet passages extend from the hollow center of the piston through the rear faces of the blades, and outlet passages extend through the front faces of the blades to the hollow center of the piston, the hollow piston center being divided into inlet and outlet spaces. In a modification, the piston is axially shiftable to vary the working chamber volume.

3,584,985
HYDROSTATIC CONTROL EQUIPMENT PARTICULARLY FOR STEERING SYSTEMS

Johannes Vagn Baatrup, Soderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed May 13, 1969, Ser. No. 824,190
Claims priority, application Germany, May 11, 1968, P 17 55 460.8
Int. Cl. F01c *1/10*
U.S. Cl. 418—61 **4 Claims**

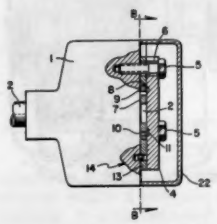


The invention relates to a hydrostatic control unit for vehicle steering systems or the like. The unit has a gerotor-type metering motor, inlet and outlet ports and two motor ports which are connectable to a piston and cylinder-type motor of the kind used for actuating a vehicle steering linkage. The unit has changeover valve means having a neutral position and left and right operating positions relates to the two directions of rotation of the metering motor. The metering motor comprises ring and star members with the ring member being capable of only rotational movement and the star member being capable of only orbital movement. Commutator-type valve means is provided which has the form of a disc and is connected to the ring member for rotation therewith.

3,584,986
GEARED PUMP

Gunnar Lyshoj Hansen, and Jorgen Hartvig Petersen, both of Nordborg, Denmark, assignors to Danfoss A/S Nordborg, Denmark

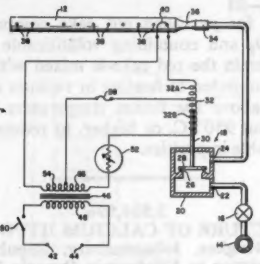
Filed July 16, 1969, Ser. No. 842,125
Claims priority, application Germany, July 12, 1968, P 17 03 801.6
Int. Cl. F01c *1/10;* **F04c** *1/06, 17/06*
U.S. Cl. 418—171 **4 Claims**



The invention relates to a gear pump of the type having internally and externally toothed, eccentrically disposed mem-

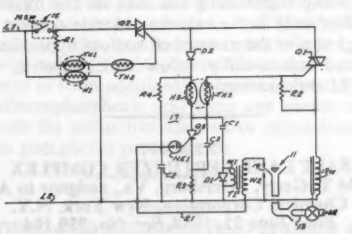
bers which rotate about their respective axes. The gear pump incorporates a centering device for centering housing elements of the pump during the assembly operations which comprises bores of different diameters in adjacent housing parts and a ball which is press fitted in the bore of larger diameter and has contact with the circular edge of the bore of lesser diameter.

3,584,987
FUEL BURNER IGNITION
Leonard H. Michaels, La Grange, Ill., assignor to Harper-Wyman Company, Hinsdale, Ill.
Filed Apr. 25, 1969, Ser. No. 819,284
Int. Cl. F23n *5/14*
U.S. Cl. 431—66 **7 Claims**



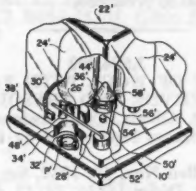
A system for igniting a fuel burner includes an electrically operated solenoid valve for controlling the flow of fuel to the burner, the valve having a pair of windings. An electric resistance heating element having a positive coefficient of resistance relative to temperature is mounted adjacent the burner in order to ignite fuel flowing from the burner. A control circuit operates to connect the heating element and one coil of the solenoid winding in series for simultaneous energization of the valve and the heating element. In order to assure operation of the valve when the heating element is initially in a hot, high resistance condition, the other coil of the solenoid winding is connected in series with a variable resistance having a negative resistance coefficient relative to temperature.

3,584,988
ELECTROTHERMAL FURNACE CONTROL
Hans G. Hirsbrunner, Attleboro, and Lyle E. McBride, Jr., Norton, both of, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed June 24, 1969, Ser. No. 836,068
Int. Cl. F23n *5/00*
U.S. Cl. 431—66 **19 Claims**



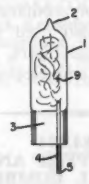
Apparatus for controlling the operation of a furnace having an electrically energizable fuel valve which, when energized, supplies fuel to the furnace burner. An ignition circuit generates recurrent sparking, when energized, upon the demand of a thermostat, and ceases to generate sparking after ignition of the fuel. A triac is connected for energizing the fuel valve and a triggering circuit for the triac causes initial triggering thereof upon energization of the ignition means and then supplies triggering current for continued triggering thereof after the ignition means ceases generating sparking. A thermistor prevents triggering current from being supplied to the triac if heated above a predetermined threshold. Means for heating the thermistor is energized to cause heating thereof when the ignition means generates sparking, the thermistor requiring a predetermined heating time interval to reach its threshold temperature such that, if the fuel is not ignited within this interval, triggering of the triac is terminated to prevent fuel from being further supplied to the burner.

3,584,989
APPARATUS FOR ARMING PERCUSSION-IGNITABLE FLASH UNITS
David E. Beach, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 22, 1969, Ser. No. 868,552
Int. Cl. F21k *5/02*
U.S. Cl. 431—93 **11 Claims**



Multilamp, percussion-ignitable flash units include a striker element having a pair of arms, one for applying a percussive blow to a flashlamp and another, connected to the first arm through a torsion spring, for applying a biasing force to the first arm. Photographic apparatus adapted to receive such flash units include an arming post having a cam surface positioned to engage the second arm of the striker element when the flash unit is mounted on the photographic apparatus to move the second arm to a position applying the biasing force to the first arm.

3,584,990
FLASHLAMP
Bernard Kopelman, Salem, Mass., assignor to Sylvania Electric Products Inc.
Filed Oct. 30, 1967, Ser. No. 679,142
Int. Cl. F21k *5/02*
U.S. Cl. 431—93 **4 Claims**



A percussively ignited flashlamp is described, in which a glass envelope containing a filling of combustible material, such as zirconium shreds, and a combustion-supporting gas, such as oxygen terminates at one end in a press seal, through which a hollow metal tube extends, the tube being closed at its outside end and open at its inside end, and filled with percussive material. A wire can extend into the combustible material in the tube.

CHEMICAL

3,584,991
DISPERSE DYEING OF CELLULOSE TRIACETATE FIBER BLENDS
William C. Sturkey, Charlotte, N.C., assignor to Celanese Corporation, New York, N.Y.
No Drawing. Filed Sept. 30, 1966, Ser. No. 583,409
Int. Cl. D06p *3/00, 3/34, 3/40, 3/82*
U.S. Cl. 8—24 7 Claims

A process for reserve dyeing the blended component in a cellulose triacetate textile blend comprising contacting the blended textile material with an aqueous bath containing a disperse acetate dye and from about 3 percent to about 40 percent by weight of β-butoxyethyl acetate based on the weight of the fiber and from about 2.5 to 30 parts per 100 parts of said β-butoxyethyl acetate of a dispersing agent composition comprising a salt of a fatty acid sulfate and an amide of a higher monobasic acid wherein the salt of a saturated fatty alcohol and amide of a higher monobasic acid are present in ratios of from about 4:1 to 2:1 respectively, and washing the dyed textile material so produced.

3,584,992
MODIFICATION OF WOOL WITH PARAFORMALDEHYDE AND CRESOL
Nathan H. Koenig, Albany, Calif., assignor to the United States of America as represented by the Secretary of Agriculture
No Drawing. Filed Nov. 19, 1969, Ser. No. 878,203
Int. Cl. D06m *13/16, 13/12, 3/10*
U.S. Cl. 8—127.6 2 Claims

Wool fibers are modified through treatment with heated mixtures of cresol and paraformaldehyde.

3,584,993
ALKYLENE BIS-ALLYLTHIOUREAS STABILIZING DISPERSE DYES
William J. Myles, 105 E. New England Ave., Summit, N.J. 07901; Francis S. Moussalli, 3210 Northampton Drive, Charlotte, N.C. 28210; Albert Bloom, 770 N. Boylston St., Boston, Mass. 02130; and Paul L. Tobey, Sommer St., Rehoboth, Mass. 02769
No Drawing. Continuation of application Ser. No. 417,813, Dec. 11, 1964. This application June 12, 1969, Ser. No. 835,891
Int. Cl. D06p *5/02*
U.S. Cl. 8—165 6 Claims

Any of alkylene di-allylthioureas, halo- or hydroxy-substituted N-aryl or N-alkyl allylthioureas, quaternary ammonium or N-heterocyclic derivatives of the allylthioureas are used to stabilize disperse dyes, protein fibers, nylon, spandex, polyurethane foam or rubber. These allylthioureas are also used as antioxidants for soaps and oils, corrosion inhibitors, anti-tarnish agents, hydrocarbon oil additives and electroplating bath additives.

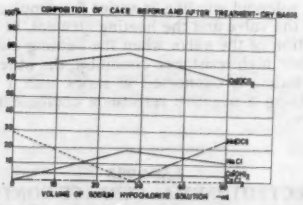
3,584,994
COMPOSITION OF MATTER AND METHOD OF TREATING INTERNAL COMBUSTION ENGINE FUEL GASES
Abraham M. Herbsman, 9721 3rd Ave., Los Angeles, Calif. 90305
No Drawing. Application Sept. 13, 1968, Ser. No. 759,780, now Patent No. 3,488,169, dated Jan. 6, 1970, which is a continuation-in-part of application Ser. No. 283,550, May 27, 1963. Divided and this application July 31, 1969, Ser. No. 864,240
Int. Cl. B01d *53/34*
U.S. Cl. 23—2E 23 Claims

A method of treating exhaust gases of an internal combustion engine, said method comprising injecting into said exhaust gases a boron trifluoride etherate or the reaction product of a boron trifluoride etherate with an amine.

3,584,995
VACUUM PURIFICATION OF RED CAKE COMPRISED SUBSTANTIALLY OF V_2O_5
Donald O. Buker, Grand Junction, Colo., and Cornelius M. Cosman, Bronxville, N.Y., assignors to American Metal Climax, Inc., New York, N.Y.
Filed Apr. 10, 1969, Ser. No. 815,084
Int. Cl. C22b *59/00*; C01g *31/00*
U.S. Cl. 23—21 8 Claims

A process for purifying red cake comprised substantially of V_2O_5 and containing volatilizable impurities is provided wherein the red cake is mixed with carbon and the mixture subjected to heating in vacuum at an elevated temperature above the fusion temperature of V_2O_5, for example, about 950° C. or higher, to reduce and remove said volatilizable impurities.

3,584,996
MANUFACTURE OF CALCIUM HYPOCHLORITE
Gilbert O. Hughes, Johannesburg, Republic of South Africa, assignor to Klipfontein Organic Products Corporation Limited
Filed Mar. 17, 1969, Ser. No. 807,726
Claims priority, application Republic of South Africa, Apr. 8, 1968, 68/2,202
Int. Cl. C01b *11/06*
U.S. Cl. 23—86 1 Claim



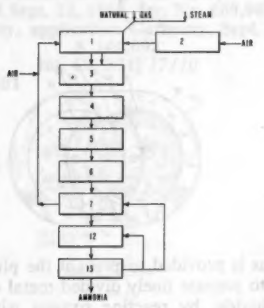
Calcium hypochlorite is produced with relatively low calcium chloride content, by chlorinating an aqueous suspension of calcium hydroxide, removing liquid from the suspension on a filter or centrifuge to produce a cake, and contacting the cake with an aqueous sodium hypochlorite solution while maintaining the cake on the filter or centrifuge. Not only is the calcium chloride content greatly reduced, but also the amount of sodium hypochlorite can be reduced substantially below stoichiometric, e.g. 40 to 70% of stoichiometric.

3,584,997
SALT LAKE FERTILIZER COMPLEX
Harold T. Gerry, Petersburg, Va., assignor to Allied Chemical Corporation, New York, N.Y.
Filed June 21, 1968, Ser. No. 739,104
Int. Cl. C01b *25/10*; C01f *5/14*
U.S. Cl. 23—165 9 Claims

A cyclic process for the economic recovery of magnesium values and phosphoric acid from natural high sulfate brines and phosphate rock by successive evaporations of the brine to obtain salt precipitates and a brine containing magnesium chloride which is decomposed to magnesium oxide and hydrogen chloride. The hydrogen chloride is reserved for digestion of phosphate rock to

yield phosphoric acid and calcium chloride solution which is utilized in one of the brine evaporation steps. This particular combination of steps assures recovery of most of the magnesium values of the brine and utilizes a net consumption of low cost natural brine to yield valuable phosphoric acid and thus effects many economies.

3,584,998
PROCESS FOR MAKING AMMONIA
Ralph V. Green, Charleston, W. Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed July 3, 1968, Ser. No. 742,347
Int. Cl. C01c *1/04;* **B01j** *9/00;* **C01b** *2/02*
U.S. Cl. 23—199 **2 Claims**



Ammonia is made without using a primary reformer by preheating the air, steam and natural gas to about 2000° F. and reacting these streams in a secondary type reformer. The synthesis gas is then fed in sequence to a heat recovery unit, a shift converter, a CO_2 absorber, a methanator if necessary, and then to a low temperature purifier which removes the excess nitrogen, methane and carbon monoxide. The purified stream is then compressed and converted into ammonia in the synthesis converter.

3,584,999
MANUFACTURE OF PHOSPHORUS PENTAFLUORIDE
Robert A. Wiesboeck, Atlanta, Ga., assignor to United States Steel Corporation, Pittsburgh, Pa.
No Drawing. Filed Jan. 16, 1968, Ser. No. 698,128
Int. Cl. C01b *25/10*
U.S. Cl. 23—205 **10 Claims**

Phosphoryl fluoride is reacted with hydrogen fluoride to form phosphorus pentafluoride and hexafluorophosphoric acid, and the hexafluorophosphoric acid may be reacted with sulfur trioxide, pyrosulfuric acid or fluorosulfonic acid to form additional phosphorus pentafluoride. The hexafluorophosphoric acid from any source may be reacted with the sulfur trioxide and/or pyrosulfuric acid to liberate phosphorus pentafluoride.

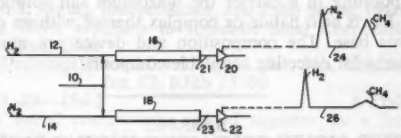
3,585,000
METHOD FOR DETERMINING SULFUR AS SULFUR DIOXIDE
Elmars Bremanis, Park Ridge, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed Sept. 19, 1968, Ser. No. 760,977
Int. Cl. B01k *1/00;* **G01n** *27/42, 31/16*
U.S. Cl. 23—230 **2 Claims**

Nitrogen interferences to the iodometric and/or microcoulometeric methods of sulfur determination are overcome by adding sodium azide to the titration cell electrolyte. The improved method is applicable to oils, crudes, solids, and petrochemicals.

3,585,001
STABILIZED TEST DEVICE AND PROCESS FOR DETECTING COUPLABLE COMPOUNDS
Raymond L. Mast, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.
No Drawing. Filed Feb. 17, 1969, Ser. No. 799,928
Int. Cl. G01n *21/06, 33/16*
U.S. Cl. 23—230 **14 Claims**

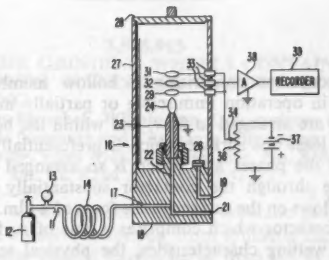
A stable test device which undergoes a color change when contacted by a couplable compound. The device comprises a carrier incorporating the dry residue of diazonium salt solution. The device is prepared by contacting a carrier with a diazonium salt solution containing a stabilizer followed by drying. The device is used in a process for detecting couplable compounds.

3,585,002
FLUID ANALYSIS BY GAS CHROMATOGRAPHY EMPLOYING MULTIPLE CARRIER GASES AND MULTIPLE COLUMNS
Fay L. Boys, Peotone, Ill., assignor to Sinclair Research, Inc., New York, N.Y.
Filed Oct. 22, 1965, Ser. No. 500,638
Int. Cl. B01d *15/08;* **G01n** *31/08*
U.S. Cl. 23—232 **9 Claims**



A fluid is analyzed by introducing measured samples into two identical chromatographic columns in each of which a different carrier gas is used. One carrier gas has a relatively high thermal conductivity, e.g. hydrogen or helium, and the other has a relatively low thermal conductivity, e.g. nitrogen. The flow of carrier gas through each column is continued to succesively elute the constitutents of the samples and the binary mixture of carrier gas and sample constituents discharged from each column is passed to separate detection elements, e.g. thermal detection elements, each responsive to changes in the gas composition passed therethrough. The responses from the separate detection elements are combined to provide a composite representation of the components of the samples.

3,585,003
IONIZATION DETECTOR FOR GAS CHROMATOGRAPHY
Martin E. Scolnick Kensington, Calif., assignor to Varian Associates, Palo Alto, Calif.
Filed Apr. 6, 1967, Ser. No. 628,925
Int. Cl. G01n *31/12*
U.S. Cl. 23—254 **7 Claims**



An ionization detector in which the collecting electrode is placed between charged barrier electrodes. The barrier

electrodes set up a potential barirer around the collector electrode. Charged particles having energies high enough to surmount the potential barrier fall into the potential well between the barrier electrodes and are efficiently collected by the collector electrode. The bias voltage on the barrier electrodes can be adjusted so that only charged particles of a desired energy will be collected. The detector can be made to respond selectively to only a desired class of compounds in the chromatographic column effluent by suitable adjustment of the bias voltage on the barrier electrodes.

3,585,004

TEST COMPOSITION AND DEVICE FOR DETECTING COUPLABLE COMPOUNDS

Raymond L. Mast, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Filed Mar. 21, 1969, Ser. No. 809,419
Int. Cl. G01n *21/06, 33/16*
U.S. Cl. 23—253 **13 Claims**

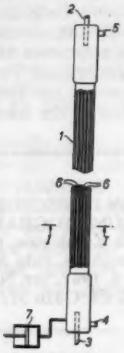
A test composition and device which undergoes an enhanced color change when contacted by a couplable compound. The composition comprises a diazonium salt and a Lewis acid halide or a complex of a Lewis acid halide and an organic Lewis base. The device is prepared by incorporating in a carrier the diazonium salt solution and the Lewis acid halide or complex thereof with an organic Lewis base. The composition and device are used in a process for detecting couplable compounds.

3,585,005

LIQUID-LIQUID CONTACTOR HAVING OPPOSING SURFACES OF DIFFERENT WETTING CHARACTERISTICS

George Christopher Coggan, Nottingham, England, assignor to National Research Development Corporation, London, England

Filed Mar. 11, 1969, Ser. No. 806,153
Int. Cl. B01d *11/04, 1/22*
U.S. Cl. 23—267 **7 Claims**



A contactor comprising a hollow member through which in operation immiscible or partially miscible fluid phases are arranged to flow, and within the hollow member at least one surface which is preferentially wetted by one of the phases and which is so arranged that during passage through the contactor substantially all of that phase flows on the surface in the form of a film.

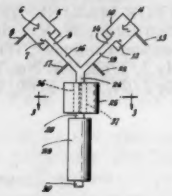
A contactor which comprises a pair of surfaces of opposite wetting characteristics, the physical separation of which is so arranged as to promote flow of the immiscible or partially miscible fluid phases on the surfaces in the form of films which are in contact with each other.

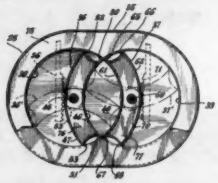
3,585,006

NON-PLUGGING REACTOR FOR TiO_2 PRODUCTION

John Candide Di Palma, Rowayton, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Nov. 6, 1968, Ser. No. 773,781
Int. Cl. B08b *9/08;* **C01g** *23/04*
U.S. Cl. 23—277 **2 Claims**





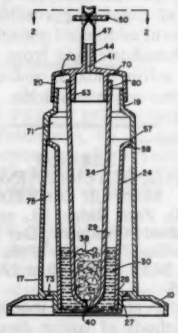
Apparatus is provided to prevent the plugging of a reactor used to prepare finely divided metal oxides, such as titanium dioxide, by reacting oxygen with a vaporous metal or metalloid salt. The reaction occurs in a reaction chamber having walls which are sectional and pivoted to rotate about a fixed axis, with the axis of rotation of one section at the center of curvature of the other. Rotation of one individual secion serves to clean the inner surface of another section and so prevent plugging of the reactor. Critical build-up of solid deposits in the reaction chamber is thereby avoided, permitting production of a high quality pigmentary product over long periods of time without interruption of operation. The apparatus is especially useful in the production of TiO_2 from $TiCl_4$ but it is also useful in the preparation of other refractory oxides.

3,585,007

GAS GENERATOR

Jesse Gross, Plainview, N.Y., assignor to Morton E. Frank, Deer Park, and Sol Lesh, New Hyde Park, N.Y.

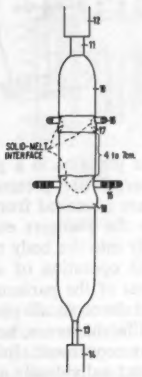
Filed Sept. 9, 1968, Ser. No. 758,291
Int. Cl. G09b *23/24;* **B01j** *7/02*
U.S. Cl. 23—282 **9 Claims**



A simple and economical apparatus particularly for science class demonstration of the generation of gases by

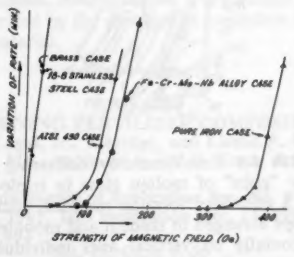
reaction of chemicals, viz., a solid and a liquid. For example, zinc and hydrochloric acid to generate hydrogen. A particular feature of the inventiond resides in the use of readily mass-produced plastic elements of a simple geometric form, such as tubes, etc., preferably transparent, involving basically a concentricity of members wherein such members hold respective entities for effecting the function of generating a gas. Another feature involves provision of a disposable cartridge furnished with a filling of material to react with a liquid.

3,585,008
ADVANCE MELT ZONE PRODUCTION OF A MONOCRYSTALLINE ROD
Wolfgang Keller, Pretzfeld, and Herbert Kramer, Ebermannstadt, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Sept. 22, 1967, Ser. No. 669,968
Claims priority, application Germany, Sept. 24, 1966, S 106,092
Int. Cl. B01j *17/10*
U.S. Cl. 23—301 **9 Claims**



Method of crucible-free zone melting a crystalline rod which comprises successively passing along the rod in the axial direction thereof an advance melting zone formed in the rod to a depth smaller than the radial thickness of the rod and a subsequent melting zone formed in the rod and extending across the entire cross section of the rod.

3,585,009
CASE FOR WATCHES
Hiroshi Harigaya, Suwa-shi, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed June 4, 1968, Ser. No. 734,285
Claims priority, application Japan, June 8, 1967, 42/36,435
Int. Cl. C22c *39/00*
U.S. Cl. 29—183 **3 Claims**



A case for watches formed from a non-corrosive ferrite stainless steel preferably an Fe-Cr-Mo-Nb alloy or Fe-Cr-Mo-Ti whereby said case has a high resistance to corrosion and a high permeability to protect the movement of the watch from an external magnetic field.

3,585,010
PRINTED CIRCUIT BOARD AND METHOD OF MAKING SAME
Betty M. Luce and Betty L. Berdan, Willowick, Ohio assignors to Clevite Corporation
No Drawing. Filed Oct. 3, 1968, Ser. No. 764,947
Int. Cl. H05k *1/00;* **B41m** *3/08*
U.S. Cl. 29—191.2 **5 Claims**

This invention is directed to the conducting element of a printed circuit comprising a copper foil and a metallic barrier layer having utility in substantially reducing the staining of printed circuit boards, said metallic barrier layer is a thin deposit on the copper foil of a metal selected from the group consisting of zinc, indium, nickel, tin, cobalt, brass, and bronze.

3,585,011
ARTICLE WELDED BY FERRITIC ALLOY
Stephen J. Matas, Independence, and John Savas, Brecksville, Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio
No Drawing. Filed May 13, 1968, Ser. No. 728,798
Int. Cl. B32b *15/00*
U.S. Cl. 29—196.1 **3 Claims**

Base metal components welded together by a ferric welding alloy consisting essentially of about: 0.08 to 0.24% carbon, 5 to 14% nickel, 0 to 8% cobalt, 0.1 to 2.5% chromium, 0.1 to 1.25% molybdenum, 0 to 1.25% manganese, 0 to 0.40% silicon, and 0 to 0.30% vanadium, balance substantially iron and wherein the ratio of Cr to Mo is greater than 1 to 1 when Ni is less than about 8.2 percent.

3,585,012
JET FUEL ADDITIVE
George C. Licke, Oxford, Mich., assignor to Ethyl Corporation, New York, N.Y.
No Drawing. Filed Dec. 20, 1968, Ser. No. 785,802
Int. Cl. C01l *1/24*
U.S. Cl. 44—68 **11 Claims**

A method of reducing manganese-containing deposits formed on the surfaces of jet engines from burning fuel containing organomanganese compounds as a smoke reducer is described. The deposits are modified by adding a sulfinyl amine to the organomanganese-containing fuel. The manganese-containing deposits are thereby reduced.

Cyclopentadienyl manganese tricarbonyl compounds are useful organomanganese compounds; N-sulfinyl anilines are useful sulfinyl amines.

3,585,013
POLYIMIDE GRINDING WHEELS CONTAINING DIAMONDS HAVING A BARBED METAL COATING
Dieter Klaus Bruschek, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Mar. 26, 1969, Ser. No. 810,826
Int. Cl. B24d *3/10;* **C08g** *51/12*
U.S. Cl. 51—295 **8 Claims**

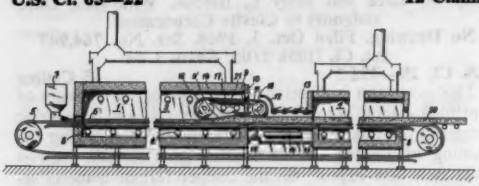
Grinding wheels bonded with an aromatic polyimide wherein the abrasive is formed from synthetic diamonds having a metal coating having barbs from 0.3 to 15 microns in height and width of metal projecting from the surface.

3,585,014

METHOD AND APPARATUS FOR MANUFACTURING LENGTHS OF FOAM GLASS

Jaromir Malesak, Prague, Czechoslovakia, assignor to Statni vyzkumny ustav sklarske techniky, Prague, Czechoslovakia

Filed May 14, 1968, Ser. No. 729,001
Claims priority, application Czechoslovakia, May 20, 1967, 3,677/67
Int. Cl. C03b *19/08*
U.S. Cl. 65—22 12 Claims



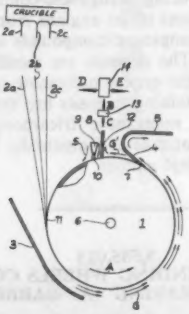
A method and apparatus for the continuous manufacture of foam glass. Glass powder and a suitable foaming agent are heated to temperatures where the mixture first sinters, then fuses, and then foams, so that the volume of the mixture, as it is continuously conveyed through a heating zone into a cooling zone, will continuously increase during foaming. Initially, the mixture has a mound-shaped cross section, but while it is continuously advanced from the heating zone into the cooling zone compression and shaping is applied to give the foaming glass a rectangular cross section. The compression of the foaming glass is applied to have the glass assume a height from 0.5 to 0.9 of its ultimate height, and while continuing the application of pressure after the final height is reached, the glass is advanced into the cooling zone where this pressure is applied at all sides onto the glass at least during an initial phase of the cooling.

3,585,015

METHOD OF AND APPARATUS FOR PRODUCING FILAMENTS FROM VITREOUS MATERIALS

Harald Hohlfeld, Wertheim (Main), and Gunter Wiegand, Hasloch, Lower Franconia, Germany, assignors to Werner Hugo Wilhelm Schuller, Munich-Grunewald, Germany

Filed Nov. 19, 1968, Ser. No. 777,095
Claims priority, application Germany, Nov. 23, 1967, P 15 96 468.8
Int. Cl. C03c *25/02*
U.S. Cl. 65—3 16 Claims



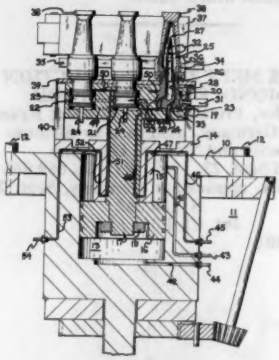
In the production of filaments from vitreous thermoplastic material threads of the material in liquid form are exuded onto the surface of a rotating drawing drum at a first location and are stripped off the surface at a downstream second location. A sizing substance for the filaments is applied onto the surface of the drum intermediate these two locations so as to be transferred onto the filaments when the same contact the drum surface.

3,585,016

PLURAL PARISON PRESSING APPARATUS FOR MAKING GLASSWARE

Clarence A. Heyne, Toledo, and George W. Irwin, Holland, Ohio, assignors to Owens-Illinois, Inc.

Filed Aug. 30, 1968, Ser. No. 756,489
Int. Cl. C03b *11/00*
U.S. Cl. 65—246 5 Claims



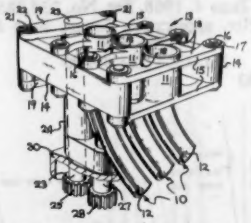
The pressing of glass parisons in a glass forming machine where plural charges are pressed simultaneously. The pressing plungers are advanced from a gob or charge loading position where the plungers extend through the neck molds and partially into the body molds, to a partial pressing position by the operation of a single hydraulic motor and the final press of the parisons is accomplished by application of equal force to all plungers or alternatively, by preselected different forces, but the plungers are capable of independent movement. Initial retraction of the plungers is carried out individually and then the single hydraulic motor completes the full plunger retraction from the molds.

3,585,017

MULTIPLE MOLD CHARGE HANDLING APPARATUS

Urban P. Trudeau, Toledo, Ohio, assignor to Owens-Illinois, Inc.

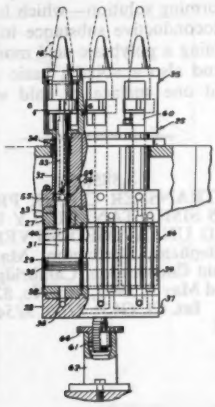
Filed Nov. 9, 1967, Ser. No. 681,650
Int. Cl. C03b *5/32*
U.S. Cl. 65—304 5 Claims



Apparatus for simultaneously delivering three mold-charges or "gobs" of molten glass to triple-cavity blank molds of a container forming machine, such comprising three scoops arranged in tandem and mounted for oscillation horizontally on vertical axes individual to the receiving upper ends of the scoops and coaxial with three bottom outlet orifices of a conventional flow feeder, the scoops being suspended from cross-heads interconnected

at their ends by reciprocable parallel links so that the scoops can be moved to feed glass to several molds, one at a time, in a predetermined sequence.

3,585,018
PLUNGER ALIGNING MEANS
George W. Irwin, Holland, Ohio, assignor to Owens-Illinois, Inc.
Filed Mar. 20, 1969, Ser. No. 808,878
Int. Cl. C03b 9/40
U.S. Cl. 65—323 8 Claims



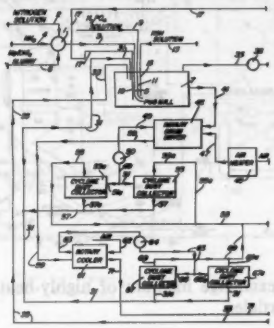
A glass forming machine wherein charges of molten glass are fed to parison molds at a parison molding station, formed into parisons by movement of plungers at the parison molding station, and thereafter transferred to a blow molding station. The glass molding machine is adapted for forming at least three charges of glass simultaneosuly.

3,585,019
FERTILIZER COMPOSITION CONTAINING METHYLENE BIS (C_1–C_4 ALKYLUREA) MATERIAL
John T. Hays, New Castle County, Del., assignor to Hercules Incorporated, Wilmington, Del.
No Drawing. Continuation-in-part of abandoned application Ser. No. 732,830, May 29, 1968, which is a continuation-in-part of application Ser. No. 631,160, Apr. 17, 1967. This application July 15, 1969, Ser. No. 842,012
Int. Cl. C09c 9/00
U.S. Cl. 71—28 6 Claims

Disclosed is methylene bis(isopropylurea) which has utility as a fertilizer. It has a unique property of substantially constant rate of release of nitrogen under nitrification conditions. Also disclosed is a fertilizer composition characterized by the presence of methylene bis(C_1-C_4 alkylurea) material.

3,585,020
NONBURNING FERTILIZER COMPOSITION
Casimer C. Legal, Jr., Elkridge, and Lionel P. Schindler, Baltimore, Md., assignors to W. R. Grace & Co., New York, N.Y.
Continuation-in-part of application Ser. No. 641,767, May 29, 1967. This application Dec. 11, 1968, Ser. No. 782,852
Int. Cl. C05c 9/00
U.S. Cl. 71—29 9 Claims

This invention is directed to a free-flowing, granular, nonburning, and noncrumbling 7–40–6 fertilizer composition consisting essentially of coprecipitated and cogranulated magnesium ammonium phosphate, magnesium potassium phosphate, monoammonium dihydrogen phosphate, monopotassium dihydrogen phosphate, magnesium hydroxide, and urea and to a process for manufacturing such fertilizer composition, all as recited hereinafter.



3,585,021
PROCESS FOR THE PRODUCTION OF AMMONIUM PHOSPHATE CONTAINING FERTILIZERS BY THE REACTION OF AMMONIUM FLUORIDE WITH ALUMINUM PHOSPHATE (FE–14)
Paul R. Geissler, Edison, N.J., assignor to Esso Research and Engineering Company
No Drawing. Filed Apr. 24, 1969, Ser. No. 819,128
Int. Cl. C05b 7/00
U.S. Cl. 71—34 16 Claims

Reaction of aluminum phosphate with ammonium fluoride, followed by removal of precipitated triammonium aluminum hexafluoride results in the production of an ammonium phosphate fertilizer. Various N/P_2O_5 ratios can be obtained by adding acid to the reaction mixture.

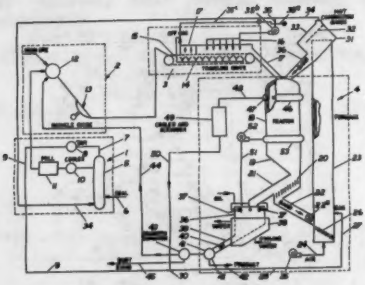
3,585,022
GRANULAR BIOLOGICALLY ACTIVE COMPOSITIONS AND METHODS OF MAKING THE SAME
Harvey C. Gray, Jr., Jacksonville, Fla., assignor to Kerr-McGee Chemical Corp., Oklahoma City, Okla.
No Drawing. Filed June 9, 1967, Ser. No. 644,824
Int. Cl. A01n 5/00, 9/00
U.S. Cl. 71—65 7 Claims

A granular biologically active material in the form of a crystalline salt containing water of crystallization and a biologically active material within the crystal lattice and a method of making such material by the steps of admixing a biologically active material with a crystalline salt containing water of crystallization, compressing under a pressure sufficient to release the water of crystallization and decompressing the mixture to recombine the water with the salt and form a dry, homogeneous mass.

3,585,023
METHOD AND APPARATUS FOR REDUCTION OF IRON ORE
Joseph Vlnaty, Aliquippa, and George A. Snyder, West Mifflin, Pa., assignors to Dravo Corporation, Pittsburgh, Pa.
Filed Aug. 20, 1968, Ser. No. 753,983
Int. Cl. C21b 1/08; F27b 21/00
U.S. Cl. 75—4 18 Claims

There is disclosed a method and apparatus for effecting partial or substantially complete conversion of iron oxide

agglomerates by forming the agglomerates, such as pellets with admixed reductant, and then introducing the pellets



into a heat exchange medium of highly-heated non-reactive solid particles.

3,585,024

UPGRADING THE TANTALUM AND COLUMBIUM CONTENTS OF TIN SLAGS

John A. Cenerazzo, Reading, Charles E. Mosheim, Zionsville, and Corrado E. Marvasi, Philadelphia, Pa., assignors to Kawecki Berylco Industries, Inc., New York, N.Y.

No Drawing. Filed Dec. 5, 1968, Ser. No. 781,605
Int. Cl. C21b *3/04*; C22b *3/00, 51/00*
U.S. Cl. 75—24 **5 Claims**

The tantalum and columbium components to tin slags are upgraded by first smelting the slag with carbon to convert these components to their respective carbides, solubilizing the iron, calcium, silicon and other diluent components of the carburized slag with a hot aqueous mixture of hydrochloric and hydrofluoric acids, and separating and calcining the residual tantalum and columbium carbides to their respective oxides free from a major proportion of each of the indigenous diluent components of the slag.

3,585,025

BASIC AGGREGATE FOR THE PRODUCTION OF STEEL

Karl-Heinz Obst, Wulfrath, Jurgen Stradtmann, Remscheid, and Kurt Benczek, Dusseldorf, Germany, assignors to Rheinische Kalksteinwerke GmbH, Wulfrath, Germany

No Drawing. Filed July 29, 1968, Ser. No. 748,202
Claims priority, application Germany, July 27, 1967, P 15 83 281.2
Int. Cl. C21c *5/28, 7/00*
U.S. Cl. 75—54 **9 Claims**

Pellets or briquettes of lime containing a substance which will cause the disintegration of the pellets or briquettes at temperatures about that of liquid pig iron improve slag formation and overcome problems heretofore encountered in the production of steel.

3,585,026

TREATMENT OF BACKGROUND AREAS OF DEVELOPED ELECTROPHOTOGRAPHIC ELEMENTS WITH CARBOXY SUBSTITUTED TRIARYLAMINE PHOTOCONDUCTORS WITH AN ALKALINE MEDIUM TO REDUCE OPACITY

William W. Rees, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Mar. 18, 1968, Ser. No. 713,999
Int. Cl. G03g *5/24, 13/22*
U.S. Cl. 96—1 **13 Claims**

Electrophotographic elements having low optical opacity are prepared by subjecting a developed image-bearing element to an alkaline medium.

3,585,027

ELECTROPHOTOGRAPHIC COPYING MATERIAL AND ITS MANUFACTURING METHOD

Sakae Shimizu, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed June 6, 1968, Ser. No. 734,917
Claims priority, application Japan, June 30, 1967, 42/41,559
Int. Cl. G03g *5/08*
U.S. Cl. 96—1.5 **4 Claims**

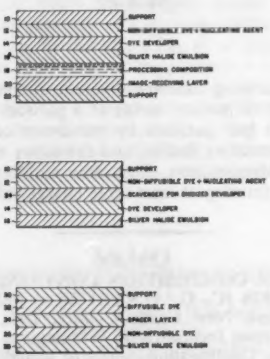
An electrophotographic copying material comprising a support and a light-sensitive or photoconductive layer formed on one surface of said support, said photoconductive layer being formed in such a way that a photoconductive layer-forming solution—which is prepared by dispersing a photoconductive substance in a basic aqueous solution containing a polybasic acid monoester of a polyvinyl acetate and also a volatile basic substance—is applied onto said one surface of said support and then dried.

3,585,028

DIFFUSION TRANSFER COLOR PRODUCTS AND PROCESSES SIMULTANEOUSLY UTILIZING EXPOSED AND UNEXPOSED SILVER HALIDES

Robert K. Stephens, Burlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 9, 1969, Ser. No. 823,339
Int. Cl. G03c *7/00, 5/54*
U.S. Cl. 96—3 **25 Claims**



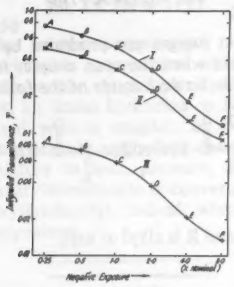
Photographic systems for preparing color transfer images employing a photosensitive element having at least one light-sensitive silver halide emulsion having associated therewith a first color-providing material which is normally diffusible in an aqueous alkaline processing medium and a second color-providing material which is not, wherein the photosensitive element is exposed and thereafter developed, as a function of development the first-named material is selectively immobilized to provide a first imagewise distribution of mobile and diffusible color-providing material and said second-named material is selectively rendered diffusible to provide a second imagewise distribution of mobile and diffusible color-providing material in areas corresponding to said first imagewise distribution, and said two imagewise distributions of mobile and diffusible color-providing material are then transferred to a dyeable stratum to impart thereto a color transfer image. The photographic systems are also characterized as employing exposed silver halide to control transfer of one color-providing material; and unexposed silver halide to control transfer of the other.

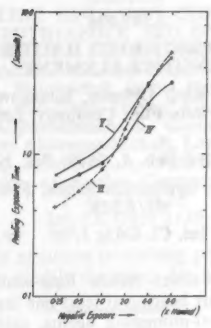
3,585,029

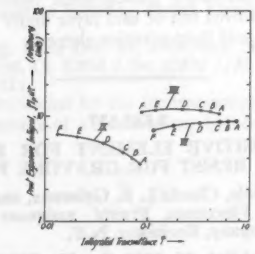
PRINTING POSITIVES FROM A PLURALITY OF COLOR PHOTOGRAPHIC NEGATIVES

Denis Manktelow Neale, Ilford, Essex, England, assignor to Ilford Limited, Ilford, Essex, England

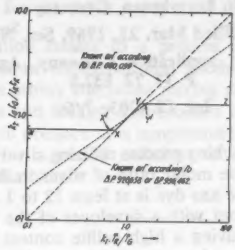
Filed July 19, 1967, Ser. No. 654,505
Claims priority, application Great Britain, July 21, 1966, 32,885/66; Dec. 6, 1966, 54,585/66
Int. Cl. G03c 5/08; G03b 27/78
U.S. Cl. 96—23 21 Claims

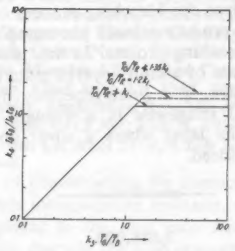






A method of printing positives from a plurality of colour negatives which comprises exposing via the said negatives print material to printing light containing at least two colour components the intensities of which, or the times of exposure of the print material to which, are controlled to provide colour correction such that printing is effected either with fixed colour correction or with colour correction in inverse proportion to the ratio of integrated transmittances to light of said colours of the negative, the printing being effected with fixed colour correction when the said ratio departs by more than a predetermined proportion from a predetermined value, and in said inverse proportion value when the said ratio does not so depart and the selection of the type of colour correction being effected by inhibition of said colour correction in inverse proportion when said ratio of integrated transmittance departs by more than the predetermined proportion from the predetermined value.





3,585,030

PROCESS FOR THE PRODUCTION OF COLOUR IMAGES BY POLYMERIZATION

Willibald Pelz, Opladen, Eberhard Günther, Leverkusen, and Hans-Dieter Meissner, Cologne-Buchheim, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 7, 1968, Ser. No. 750,771
Claims priority, application Germany, Aug. 16, 1967, P 16 97 470.6
Int. Cl. G03c 5/54, 1/72, 1/76
U.S. Cl. 96—29 15 Claims

Colored images can be produced from a photographic material comprising at least one silver halide emulsion layer and containing diffusible dyes or precursors of dyes that contain groups rendering the dyes or precursors capable of polymerizing and thus becoming diffusion-fast under the influence of oxidation products of silver halide developing agents which oxidation products act as initiators for the polymerization.

3,585,031

ACTINIC RADIATION SENSITIVE PHOSPHATIDE COMPOUNDS

Lester P. Hayes, Decatur, Ill., assignor to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Feb. 5, 1969, Ser. No. 796,841
Int. Cl. G03c 7/02
U.S. Cl. 96—33 25 Claims

Method of forming and developing latent images from an element bearing a layer of solid, substantially oil-free phosphatide particles.

3,585,032

PRODUCTION OF COLORED PHOTOGRAPHIC IMAGES BY THE SILVER DYE BLEACH PROCESS

Erich Böckly, Leverkusen, Justus Danhäuser, Cologne-Stammheim, Max Heilmann, Cologne-Flittard, Johannes Götze, Bergisch-Neukirchen, and Eberhard Günther, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Mar. 21, 1969, Ser. No. 809,407

Claims priority, application Germany, Apr. 4, 1968, P 17 72 137.8

Int. Cl. G03c 7/00

U.S. Cl. 96—53 3 Claims

Silver dye bleaching process utilizing silver halide emulsions in which the molar ratio of silver to the bleachable azo groups of the azo dye is at least 12 to 1 and development is carried out with a developer of the p-phenylenediamine series having a high sulfite content.

This invention relates to a photographic material and to a process for the production of colored photographic images by the silver dye bleaching process.

It is known to produce colored photographic images by the silver dye bleaching process. In this process, the dye (or dyes in the case of a multi-layered material), which is usually an azo dye, in a homogeneously dyed colloidal layer is bleached imagewise in a strongly acid bath in those areas of the layer where a silver image has previously been produced.

3,585,033

DIAZOTYPE COMPOSITION EMPLOYING 3'-SUBSTITUTED 2-HYDROXY-3-NAPHTHANILIDES AS COUPLERS

Robert C. Desjarlais, South Hadley Falls, Mass., assignor to The Tecnifax Corporation, Holyoke, Mass.

No Drawing. Filed Sept. 13, 1967, Ser. No. 667,372

Int. Cl. G03c 1/54

U.S. Cl. 96—75 35 Claims

2-hydroxy-3-naphthanilides which are substituted in the 3' position with a non-chromophoric and electron-withdrawing substituent which is attached to the anilino nucleus through the carbon atom of a carbonyl group or the sulfur atom of a sulfonyl group are disclosed. The use of these compounds as color-forming or coupling components for diazonium compounds and light-sensitive diazo compositions containing such naphthanilides as coupling components are also disclosed.

3,585,034

MANUFACTURE OF PHOSPHOR SCREENS

Steven Levinos, Vestal, N.Y., assignor to GAF Corporation, New York, N.Y.

No Drawing. Filed Apr. 3, 1967, Ser. No. 627,644

Int. Cl. G03c 1/68, 5/00

U.S. Cl. 96—35.1 13 Claims

Photosensitive compositions for color television picture tube manufacture comprising an ethylenically unsaturated monomer material and a catalyst system comprising (a) a stabilized diazonium salt which functions as an electron-acceptor and (b) a photosensitive co-catalyst selected from the group consisting of (1) a complex ferric salt containing an electron-donating group and (2) a mixture comprising a simple ferric salt and an organic polycarboxylic acid capable of reducing said simple ferric salt to ferrous when subjected to actinic radiation.

3,585,035

SILVER HALIDE PHOTOGRAPHIC ELEMENTS CONTAINING PHENOL OR NAPHTHOL CARBOXYLIC ACID AMIDE COUPLERS

Wolfgang Muller-Bardorff, Cologne, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

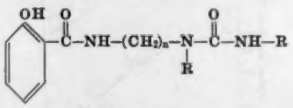
No Drawing. Continuation of application Ser. No. 686,723, Nov. 29, 1967. This application Apr. 29, 1969, Ser. No. 820,339

Claims priority, application Germany, Dec. 2, 1966, A 54,247

Int. Cl. G03c 7/00

U.S. Cl. 96—55 5 Claims

Improved cyan images are produced by photographic color development when the cyan coupler is a substituted 1-phenol-2 carboxylic acid amide of the following formula



wherein n=1–6 and R is alkyl or aryl.

3,585,036

PHOTOGRAPHIC SILVER HALIDE LIGHT-SENSITIVE ELEMENT

Kazuya Sano and Kinji Ohkubo, Kanagawa, Japan, assignors to Fuji Photo Film Company, Ltd., Kanagawa, Japan

No Drawing. Filed Feb. 1, 1968, Ser. No. 702,171

Claims priority, application Japan, Feb. 1, 1967, 42/6,518

Int. Cl. G03c 1/06

U.S. Cl. 96—76 6 Claims

A photographic silver halide light-sensitive element comprising a support bearing at least one layer containing at least one of anti-plumming agents, said agent being present in said layer as a fine dispersion of a solution thereof in a non-volatile organic solvent, said solvent being substantially sparingly soluble in water under the condition of preparing photographic light-sensitive elements but dissolved out of said layer under the condition of developing said light-sensitive element.

3,585,037

LIGHT SENSITIVE ELEMENT FOR PREPARING ETCHING RESIST FOR GRAVURE PURPOSES

Daniel J. Gallois, Claude L. E. Guestaux, and Monique L. Lauverjat, Vincennes, France, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 21, 1968, Ser. No. 707,131

Claims priority, application France, Nov. 13, 1967, 127,848

Int. Cl. G03c 1/90

U.S. Cl. 96—83 10 Claims

Gravure resist film comprising resinous binding layers which permit the stripping of the temporary support from the photosensitive emulsion, after wet transfer without the formation of blisters in the emulsion. The inclusion of compounds soluble in processing baths, such as hydroquinone, in a temporary binding varnish layer, and according to another modification, the inclusion of a water sensitive compound, such as casein, in a temporary binding latex layer, permits the simple removal of resinous

material adhering to the photosensitive emulsion, after stripping, with 35° to 40° C. water. No organic solvent is required for the removal of such residues from the emulsion.

3,585,038
SELECTED HEXAARYLBIIMIDAZOLE OXIDATION SYSTEMS
Lawrence Anthony Cescon and Rolf Dessauer, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Continuation-in-part of application Ser. No. 363,610, Apr. 29, 1964. This application Nov. 13, 1967, Ser. No. 682,624
Int. Cl. G03c *1/52*
U.S. Cl. 96—90 **12 Claims**

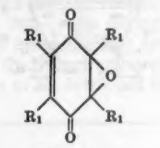
An oxidizable mixture comprising a hexaarylbiimidazole and an oxidizable composition which is a selected p-arylenedi tertiaryamine, p-phenylene diamine admixed with a coupler, an imino hydrazine or N-acyl derivative thereof admixed with a coupler, an o-o'-disubstituted phenol, and an organic sulfhydryl compound. By subjecting the mixture to heat, pressure, light or electron beam, the hexaarylbiimidazole is converted to the corresponding triarylimidazolyl radical which oxidizes the oxidizable composition.

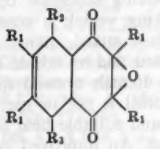
3,585,039
SILVER HALIDE EMULSION CONTAINING YELLOW BENZOTHIAZOLE AZO DYES USEFUL IN THE SILVER DYE BLEACHING PROCESS
Karlheinz Kabitzke, Cologne-Buchheim, Erich Bockly, Leverkusen, Steinbuchel, Justus Danhauser, Cologne-Stammheim, Karl-Heinz Freytag, Leverkusen, and Hans Vetter, Cologne-Stammheim, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Mar. 4, 1969, Ser. No. 804,255
Claims priority, application Germany, Mar. 8, 1968, P 16 22 923.5
Int. Cl. G03c *1/10*
U.S. Cl. 96—99 **6 Claims**

Silver halide emulsion containing yellow benzothiazole azo dyes to be used in the silver dye bleach process.

3,585,040
MONO-EPOXY QUINONE HARDENERS FOR GELATIN
Mary J. Youngquist and John W. Gates, Jr., Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Oct. 24, 1968, Ser. No. 770,420
Int. Cl. C09d *3/04*; G03c *1/30*
U.S. Cl. 96—111 **17 Claims**

Gelatin is hardened by the incorporation therewith of hardening amounts of a mono-epoxy quinone having the formula:





wherein R_1 represents hydrogen or alkyl, and R_2 and R_3 each represent hydrogen or alkyl or together form a methano group.

3,585,041
PROCESS FOR LOWERING AFLATOXIN LEVELS IN AFLATOXIN-CONTAMINATED SUBSTANCES
Godfrey E. Mann, New Orleans, Louis P. Codifer, Jr., and Homer K. Gardner, Jr., Metairie, and Frank G. Dollear, Pearl River, La., assignors to The United States of America as represented by the Secretary of Agriculture
No Drawing. Filed July 23, 1968, Ser. No. 746,741
Int. Cl. A23k *3/00*; A23l *1/20*
U.S. Cl. 99—2 **3 Claims**

This invention relates to a process for lowering the aflatoxin level in an agricultural product contaminated with aflatoxin which comprises mixing said product with methyl amine and holding said mixture in a closed vessel at atmospheric pressure at a temperature about from 75° to 100° C. for a period sufficient to cause substantial lowering of aflatoxin.

3,585,042
METHOD OF PREPARING NON-STICKY ANIMAL FEEDS COMPRISING MOLASSES MEAL
Peter Nairne Boyes and Thomas Geoffrey Cleasby, Maidstone, North Coast, Natal, Republic of South Africa, assignors to Moreland Molasses Company Limited
No Drawing. Filed June 27, 1967, Ser. No. 649,108
Claims priority, application Republic of South Africa, July 7, 1966, 66/3,307; Feb. 6, 1967, 67/0,672
Int. Cl. A23l *1/04*; C12b *3/04*
U.S. Cl. 99—6 **7 Claims**

A method of counteracting the characteristic stickiness of animal feeds incorporating molasses, such as molasses meal, by applying to the feed such micro-organisms as will specifically degrade the gum content of the molasses in the feed.

3,585,043
METHOD FOR PREPARING A HOMOGENOUS SILAGE ADDITIVE
James C. Moore and Andrew B. Funk, Memphis, Tenn., assignors to W. R. Grace & Co., New York, N.Y.
Filed Sept. 18, 1968, Ser. No. 760,407
Int. Cl. A23k *3/03*
U.S. Cl. 99—8 **3 Claims**

A homogeneous, free-flowing urea composition which has particular utility as a silage additive and an improved process for preparing same. Urea and one or more desired additives are intimately mixed and preheated to a temperature approaching the melting point of urea. The mixture is agitated and uniformly coated with molten urea. The coated particles are cooled and the resulting granules sized. In a second embodiment, the urea-additive mixture is heated to form a molten mass which is thereafter allowed to cool and solidify in a physical form suitable for grinding and sizing.

3,585,044
LICORICE-CONTAINING CITRUS JUICE BEVERAGE
Dale H. Koski and Joan B. Koski, both of P.O. Box 14100, Benjamin Franklin Station, Washington, D.C. 20044
No Drawing. Filed Feb. 12, 1968, Ser. No. 704,560
Int. Cl. A23l *1/02*
U.S. Cl. 99—28 **7 Claims**

A palatable licorice-containing citrus juice beverage is produced by a series of steps which comprise admixing licorice root and water, bringing the admixture to a boil with the addition of sugar for a period of time sufficient to result in a palatable, final beverage, and admixing the licorice-containing admixture with citrus juice.

3,585,045
METHOD FOR PREPARING BEER WORT
Conrad Lenz, 2 Annenhofstrasse, 805 Freising, Bavaria, Germany
Filed May 2, 1967, Ser. No. 635,570
Claims priority, application Germany, May 10, 1966, L 53,553
Int. Cl. C12c
U.S. Cl. 99—52 4 Claims

A continuous mash-making apparatus including a grist mill for wet crushing of malt and a device for suspending the crushed malt in water is connected with a brewing installation of at least two heatable vessels by a mash pipe equipped with a two-way valve which alternatively connects the two vessels with the container. During operation of the apparatus, a portion of the mesh is transferred from the mash-making apparatus first to one of the vessels, and the contents of the first vessel are being heated while another portion of the mash is being transferred to the second vessel for later mixing with the heated contents of the first vessel.

3,585,046
METHOD FOR PREPARING DANISH PASTRY
John F. Schaible, Easton, Pa., and Simon S. Jackel, Westport, Conn., assignors to Baker Research Development Service, Inc., New York, N.Y.
No Drawing. Filed Mar. 27, 1968, Ser. No. 716,298
Int. Cl. A21d *13/08*
U.S. Cl. 99—92 11 Claims

A plurality of discrete, hard, particles comprising shortening having a melting point of not greater than about 108° F. and having a particle size of not greater than about 500 $mm.^3$ such that one pound of said shortening comprises at least about 1000 particles, is incorporated in developed, leavened, Danish pastry dough and distributed therethrough. The dough can then be directly processed into Danish pastry, without the necessity of performing any roll-and-fold steps.

3,585,047
ENZYMATIC IMPROVEMENT OF SOYBEAN FLAVOR AND STABILITY
Masao Fujimaki, Hiromichi Kato, Soichi Arai, and Michiko Yamashita, Tokyo, Japan, assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Filed Oct. 30, 1968, Ser. No. 772,039
Int. Cl. A23l *1/20*
U.S. Cl. 99—98 1 Claim

Incubation of soybean curd or defatted soybean flour with certain highly specific proteolytic enzymes liberates extraction-resistant beany and astringent flavor constituents and reversion-sensitive lipid materials from their apparent extremely close association with the proteinaceous constituents. The removal of the enzymatically liberated objectionable taste and oxidation susceptible constituents by washing with aqueous ethanol then provides stabilized soybean materials having little if any astringent and beany flavor and a distinctly diminished tendency to flavor reversion.

3,585,048
PLASTIC FOOD PACKAGE ADAPTED TO BE HEATED
Raymond C. Uhlig and Gloria A. Uhlig, both of 2387 Oakview Drive, Pittsburgh, Pa. 15237
Filed Apr. 1, 1969, Ser. No. 811,717
Int. Cl. B65b *25/22*
U.S. Cl. 99—174 3 Claims

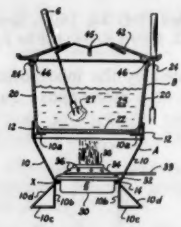
Precooked food is enclosed in a flexible envelope having an end adapted to be opened. The envelope is contained in a self-sustaining sheath of partially baked dough that is open at the same end as the openable end of the envelope. The dough sheath protects the envelope when

the package is placed in an electric toaster to complete the baking of the dough and to heat the food in the envelope.

3,585,049
PROCESS FOR PASTEURIZING FLOUR
Edward L. Galle, St. Paul, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.
Continuation-in-part of abandoned application Ser. No. 596,674, Nov. 23, 1966. This application Oct. 20, 1969, Ser. No. 871,422
Int. Cl. A21d *6/00*
U.S. Cl. 99—215 4 Claims

Flour is pasteurized without sufficient protein denaturation to affect baking qualities by heating the flour to an elevated temperature of at least about 120° F., the heated flour in sealed containers and allowing the containers to cool naturally during their storage period within a storage warehouse such that the cooling conditions and temperature result in a total lethal dosage (L) of 1 to 7.

3,585,050
COOKING ENSEMBLE AND COVER THEREFOR
Hans S. Singer and Walter K. Chlystun, Spartanburg, S.C., assignors to Mahasi Corporation, Spartanburg, S.C.
Filed Nov. 15, 1968, Ser. No. 776,163
Int. Cl. A47j *37/12*
U.S. Cl. 99—357 10 Claims



An improved cooking ensemble comprising the combination of a cooking vessel; a cover for the cooking vessel having a splash guard, utensil holding means for positioning the utensil and an edible during cooking and means for holding utensils around the periphery of the cover when the utensil is not in use; a support to hold the cooking vessel and suitable heat source and a cluster of removable dishes. An improved cover for a cooking vessel having splash guards to prevent cooking medium from splashing out of the vessel, channels to hold utensils with an edible attached thereto and means around the periphery of the cover to hold utensils not in use.

3,585,051
METHOD OF POLISHING SURFACES
Keith Liddell Johnson, Matteson, Ill., assignor to Swift & Company, Chicago, Ill.
No Drawing. Filed Dec. 8, 1966, Ser. No. 600,051
Int. Cl. C08b; C09d; C09g
U.S. Cl. 106—3 8 Claims

An improved method for polishing a surface in the course of an aqueous washing operation is set forth. The method comprises dispersing in at least one of wash and rinse water a fatty imidazoline salt of a strong monoprotic acid to form a dispersion and merely contacting the surface with the dispersion to produce a lustrous, water repellent polish thereon.

3,585,052
HEAT RESISTANT PAINT
Jacob F. Dannewald, Box 327; Albert S. Dannewald, Box 532; and Robert I. Strader, General Delivery, all of Stettler, Alberta, Canada; and Rudolph H. Dannewald, Box 1176, Brooks, Alberta, Canada
No Drawing. Filed Oct. 15, 1968, Ser. No. 767,857
Int. Cl. C09d *1/04*
U.S. Cl. 106—84 6 Claims

A composition for use in forming a heat and flame resistant paint which comprises from about 14 to 19½ parts by weight of finely divided clay, from about 1½ to 2½ parts by weight of finely divided asbestos, from about 14 to 19½ parts by weight of finely divided silica sand or silica flour, from about 18 to 30 parts by weight of soluble glass, from about 5 to 9 parts by weight of red or black iron oxide or white titanium oxide, from about ½ to 1⅔ parts by weight of rosin, and at least about 3½ parts by weight of an aqueous solution containing 50% by weight sodium hydroxide.

3,585,053
GLASS-CERAMIC ARTICLE AND METHOD
Hermann L. Rittler, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.
No Drawing. Continuation-in-part of abandoned application Ser. No. 365,199, May 5, 1964. This application Mar. 12, 1969, Ser. No. 806,740
Int. Cl. C03c *3/22*
U.S. Cl. 106—39 6 Claims

This invention relates to the strengthening of glass-ceramic articles in which the crystal content thereof comprises the predominant part of the articles and containing beta-quartz stuffed with magnesium ions as the primary crystal phase. The strengthening is secured through consecutive ion exchange reactions wherein lithium ions from an external source are first exchanged for magnesium ions in the beta-quartz within a surface layer on the article and thereafter sodium and/or potassium ions from an external source are exchanged for the lithium ions diffused into the structure of the beta-quartz during the first exchange. This consecutive ion exchange does not alter the essential structural nature of the beta-quartz crystals but does cause compressive stresses to be developed in the surface layer.

3,585,054
GLASS-CERAMIC ARTICLE AND METHOD
Bruce R. Karstetter, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.
No Drawing. Continuation-in-part of abandoned application Ser. No. 365,179, May 5, 1964. This application Nov. 25, 1968, Ser. No. 778,788
Int. Cl. C03c *3/22*
U.S. Cl. 106—39 3 Claims

This invention relates to the strengthening of glass-ceramic articles wherein the crystal content thereof comprises the predominant portion and having crystals containing magnesium, aluminum, and silicon ions selected from the group consisting of cordierite, enstatite, spinel, and quartz solid solutions constituting the principal crystal phases. The strengthening is effected through an ion exchange reaction carried out within a surface layer of the glass-ceramic article wherein lithium ions from an external source are exchanged for magnesium ions in the crystal phase to cause the crystals in this surface layer to be transformed to beta-eucryptite or beta-spodumene, this transformation resulting in the surface layer having a lower coefficient of thermal expansion than the interior portion of the article and thereby creating an integral surface compression layer in the article.

3,585,055
STRENGTHENED GLASS-CERAMIC ARTICLES AND METHOD OF PRODUCTION
George H. Beall, Corning, and Bruce R. Karstetter, Painted Post, N.Y., assignors to Corning Glass Works, Corning, N.Y.
No Drawing. Filed May 8, 1967, Ser. No. 636,602
Int. Cl. C03c *3/22*
U.S. Cl. 106—39 5 Claims

This invention relates to the strengthening of glass-ceramic articles through an ion exchange process wherein the strength is retained when the articles are used in service applications at high temperatures. More particularly, this invention relates to the strengthening of glass-ceramic articles containing stuffed beta-quartz as the principal crystal phase through the exchange of lithium ions for aluminum ions in the surface of such articles at a temperature of at least about 900° C.

3,585,056
SINTERED CERAMIC BODIES OF ALUMINA-NEPHELINE SYENITE COMPOSITIONS
Edward A. Bush, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.
No Drawing. Filed June 19, 1967, Ser. No. 647,211
Int. Cl. C04b *33/00*
U.S. Cl. 106—45 5 Claims

Sintered ceramic bodies, particularly tableware items, are made from alumina-nepheline syenite compositions. Alumina and nepheline syenite together form at least 88% of compositions, balance being clay and/or mineralizers. Alumina constitutes from 50 to 70% of total of alumina and nepheline syenite. Compositions are plastified with fugitive organic vehicle and formed into green bodies by transfer or injection molding. The vehicle is volatilized before firing. Fired bodies are impervious, have high modulus of rupture.

3,585,057
LEAD PHOSPHATE OPTICAL GLASS
Walter Jahn, Ingelheim, Germany, assignor to JENaer Glaswerk Schott & Gen., Mainz, Germany
No Drawing. Filed Aug. 31, 1967, Ser. No. 664,620
Claims priority, application Germany, Sept. 8, 1966, J 31,733
Int. Cl. C03c *3/16*
U.S. Cl. 106—47 6 Claims

Novel optical flint glass compositions on a lead phosphate basis and a method of making the same are disclosed. The compositions comprise the following ingredients: 20 to 60 wt. percent lead oxide (PbO), 30 to 70 wt. percent P_2O_5, and 7.2–11 wt. percent of at least one of the oxides of magnesium, calcium, strontium, barium and aluminum. The glass compositions are chemically resistant, resistant to devitrification, stable to weathering and corrosion and have the desired transmission in the short wave length blue range of the spectrum.

3,585,058

ALUMINA-CHROME REFRACTORIES

Daniel E. Reardon, Bethel Park, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed June 3, 1968, Ser. No. 733,848
Int. Cl. C04b 35/10, 35/12
U.S. Cl. 106—66 3 Claims

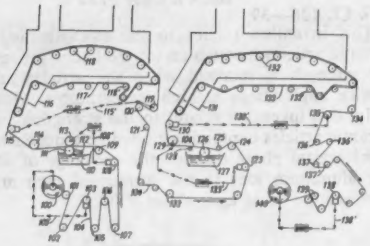
Sintered refractory comprising from 25 to 60%, by weight, Cr_2O_3, ½ to 10% TiO_2, the remainder Al_2O_3 and less than 1% associated impurities.

3,585,059

PROCESS FOR PRODUCTION OF BARRIER COATED NYLON FILM

Daniel G. James, Chester, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Original application Aug. 16, 1966, Ser. No. 572,796, now Patent No. 3,514,367, dated May 26, 1970. Divided and this application Oct. 10, 1969, Ser. No. 870,868
Int. Cl. B32b 27/34; B44d 1/16
U.S. Cl. 117—7 13 Claims



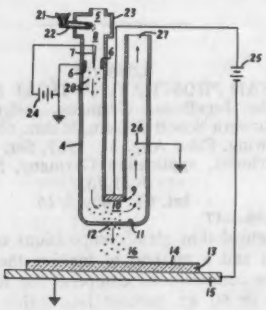
A process for coating nylon film with a polyurethane primer coating, a waterproof coating and a barrier coating, and an article produced by the process. The coated film may be laminated to polyethylene film.

3,585,060

ELECTROGASDYNAMIC PARTICLE DEPOSITION SYSTEMS

Meredith C. Gourdine, West Orange, N.J., and Guy R. Morton, Bronx, N.Y., assignors to Gourdine Systems, Incorporated, Livingston, N.J.

Filed Jan. 24, 1969, Ser. No. 793,729
Int. Cl. B05b 5/02
U.S. Cl. 117—17 5 Claims



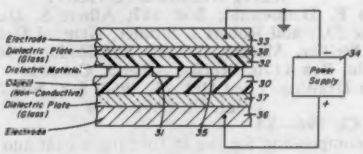
Means and methods are disclosed for extracting charged particles from a high velocity air stream so as to uniformly coat a substrate. The particles are entrained in a moving gaseous medium, charged by an ionizing electric field, directed at a bend zone into a non-turbulent fluid region, and driven by a repelling electric field to a deposition surface.

3,585,061

ELECTROSTATIC PROCESS FOR REPRODUCING AN IMAGE FORMED BY DISCONTINUOUS RAISED AREAS

Hubert B. Allinger and Theodore H. Morse, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 29, 1968, Ser. No. 748,560
Int. Cl. G03g 13/04, 13/08, 13/10
U.S. Cl. 117—17.5 6 Claims



An electrostatic process comprises reproducing a visible image formed by discontinuous areas on a surface of an object as a latent electrostatic image on a surface of a dielectric material. The surface of the object is positioned in contact with a sheet of dielectric material which, in turn, is placed in contact with an electrode. A source of potential is applied across the object and the electrode thereby creating an electric field. The source of potential is removed prior to its being de-energized and the dielectric material is then removed whereby an electrostatic charge pattern corresponding to said areas is produced on the surface of said dielectric material and developed xerographically to produce a visible image.

3,585,062

METHOD OF PRODUCING A HEAT-SEALABLE NON-THERMOPLASTIC FOAM MATERIAL

Frederick F. Hand, Wyckoff, and Peter M. Hay, Summit, N.J., assignors to J. P. Stevens & Co., Inc., New York, N.Y.

Filed July 18, 1967, Ser. No. 654,263
Int. Cl. C08g 53/20
U.S. Cl. 117—21 3 Claims

The process for producing a heat-sealable non-thermoplastic foam by applying to a non-thermoplastic foam material a thermoplastic resin in dry particulate solid form allowing the dry particulate resin to enter the cells of the foam, and thereafter sintering the particles to bring about adhesion of the dry solid particulate particles to the cell walls of the foam without substantially configuratively deforming the particle.

3,585,063

PRODUCTION OF COATED FILM

Timothy Alan Remmington, Hertford, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Continuation-in-part of application Ser. No. 620,678, Mar. 6, 1967. This application Aug. 1, 1968, Ser. No. 749,270
Claims priority, application Great Britain, Aug. 3, 1967, 35,763/67
Int. Cl. C09j 7/02; B32b 27/08
U.S. Cl. 117—47 8 Claims

Using a resin obtained by copolymerising the condensation product of acrylamide or methacrylamide and a mono-

aldehyde with at least one other unsaturated monomer as an intermediate adhesive layer between a base film and a heat-sealable coating for the film.

3,585,064
UNITING OF FUSIBLE PORCELAIN TO A PRECIOUS METAL BASE MEMBER
Emil M. Prosen, Bala-Cynwyd, Pa., assignor to Nobilium Products, Inc., Philadelphia, Pa.
Filed May 31, 1968, Ser. No. 733,387
Int. Cl. B44d *1/14*
U.S. Cl. 117—70C 5 Claims

Fusible porcelain is united in a thin layer to a precious metal base member by first forming on such precious metal base member a gold coat having a carpet-like, irregular surface composed of gold particles which are soldered or sweated to the base member and are laterally separated from each other, and then applying to such carpet-like, irregular surface a paste of a relatively low-fusing porcelain which upon being fused in situ is mechanically united to said carpet-like surface by interlocking to such gold particles. The interlock thus formed of the porcelain layer with the pure gold particles has been found to permit of limited differential expansion and contraction between the porcelain layer and the base member under the same heat conditions due to the fact that the pure gold particles yield with movement of the porcelain. There is also provided the novel composite structure of a precious metal base member, a gold coat layer having spaced gold particles soldered or sweated to the base member, and a porcelain layer interlocked to such gold coat particles.

3,585,065
URETHANE-SILOXANE PAINT AND PAINTED PRODUCT
Olin B. Johnson, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.
No Drawing. Filed Nov. 18, 1968, Ser. No. 776,764
Int. Cl. B44d *1/50;* C08f *11/04;* C08g *47/10*
U.S. Cl. 117—93.31 21 Claims

A radiation-curable, film-forming paint binder comprising in combination (a) an alpha-beta olefinically unsaturated diurethane and (b) an alpha-beta olefinically unsaturated siloxane. The former is formed by reacting an organic diisocyanate with a hydroxy ester of an alpha-beta olefinically unsaturated carboxylic acid. The latter is formed by reacting such an ester with a siloxane having at least two functional groups selected from hydroxyl groups and hydrocarbonoxy groups. The preferred hydroxyl bearing esters are monohydroxy esters of acrylic or methacrylic acid. Cinnamates and crotonates may also be used. The above referred to combination in some embodiments is of a suitable viscosity for undiluted application to a substrate. In other embodiments, the combination is applied in solution with vinyl monomers and/or olefinically unsaturated organic resins and/or volatile solvents which can be flashed off prior to curing. The binder solution is applied to a substrate as a liquid film and crosslinked thereon by an electron beam.

3,585,066
SODIUM SILICATE
John H. Wills, Cheyney, Pa., assignor to Philadelphia Quartz Company, Philadelphia, Pa.
No Drawing. Continuation-in-part of application Ser. No. 574,899, Aug. 25, 1966. This application Sept. 4, 1969, Ser. No. 855,380
Int. Cl. C03c *3/00*
U.S. Cl. 117—100 4 Claims

Integral sodium orthosilicate and anhydrous sodium sesquisilicate are manufactured as particles of caustic soda encapsulated with anhydrous sodium metasilicate in such a manner that the overall composition is form 1.75–2.5 $Na_2O:SiO_2$ and 1.35–1.65 $Na_2O:SiO_2$, respectively.

3,585,067
TEXTILE MATERIALS AND A PROCESS FOR FINISHING THE SAME
Wolfgang Klebert, Leverkusen, Karl Schaefer, Opladen, Walter Simmler, Cologne-Mulheim, and Hans Niederpruem, Monheim, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed May 22, 1967, Ser. No. 640,405
Claims priority, application Germany, May 27, 1966, F 49,311
Int. Cl. B32b *23/08;* B44d *1/22;* D06m *13/00*
U.S. Cl. 117—139.4 7 Claims

Textile materials are finished by treatment with an aqueous bath containing vinyl polymers or copolymers and reaction products containing isocyanate groups prepared from polisocyanates and organopolysiloxanes which have at least two active hydrogen atoms as determined by the Zerewitinoff method and a molecular weight of up to about 25,000.

3,585,068
CHROMISING OF FERROUS METAL SUBSTRATES
Kenneth Urmston Holker, Harrogate, and Colin Paul Albon, Knaresborough, England, assignors to Albright & Wilson Limited, Oldbury, near Birmingham, England
No Drawing. Filed June 5, 1967, Ser. No. 643,734
Claims priority, application Great Britain, June 7, 1966, 25,415/66; Mar. 16, 1967, 12,455/67; Apr. 11, 1967, 16,641/67
Int. Cl. C23c *9/00*
U.S. Cl. 117—107.2 19 Claims

A process for chromising ferrous metal workpieces and particularly sheet and plate, which is carried out while the ferrous metal is coiled or stacked in the furnace. The ferrous metal workpiece is first coated with an adherent porous chromium metal containing surface. Subsequently a metal halide-containing coating is applied to the porous chromium-containing surface. A coil or stack is formed wherein the coated workpiece or workpieces have surfaces in contact with one another and the workpieces are then chromised in a furnace at elevated temperatures.

3,585,069
METHOD OF INHIBITING SULFIDE CRACKING WITH A REACTION PRODUCT OF B-HYDROXY BUTYRALDEHYDE AND HYDROGEN SULFIDE
Willliam D. Owsley, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.
No Drawing. Filed Dec. 6, 1967, Ser. No. 688,376
Int. Cl. C23f *7/24, 11/16*
U.S. Cl. 117—127 10 Claims

Inhibition of sulfide cracking and corrosion is obtained through the use of an inhibitor comprising the reaction product of an aldehyde and a hydrogen sulfide wherein the reaction product is deposited on the metal surface to be protected prior to exposure to corrosive medium.

3,585,070

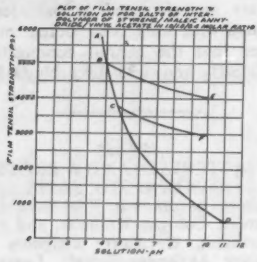
METHOD FOR SIZING TEXTILES

Charles R. Williams, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of application Ser. No. 755,726, Aug. 27, 1968. This application Sept. 4, 1969, Ser. No. 855,319

Int. Cl. D06m *13/20*

U.S. Cl. 117—139.5 6 Claims



Disclosed herein is a method for sizing textiles which employs as the sizing agent a mixed salt comprising the reaction product of an interpolymer with a fixed alkali base and a fugitive alkali base; the latter subsequently being volatilized away during processing of the sized textile. The interpolymer comprises (a) 1.0 molar proportion of a maleic or fumaric acid or anhydride or partial ester, (b) from 0.1 to 3.0 molar proportion of a monovinylidene aromatic monomer and (c) from zero to a finite molar proportion of an alpha-olefin, a vinyl ester, alpha-beta-ethylenically unsaturated nitrile, an acrylic or methacrylic ester or a vinyl alkyl ether. From 10 to 70% of the free carboxyl groups of the interpolymer are combined with fixed base, i.e., non-volatile amine or alkali metal base, and from 5 to 90% of said free carboxyl groups are combined with fugitive base, i.e., ammonia, ammonium hydroxide or volatile amine.

3,585,071

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE INCLUDING A SEMICONDUCTOR MATERIAL OF THE $A^{II}B^{VI}$ TYPE, AND SEMICONDUCTOR DEVICE MANUFACTURED BY THIS METHOD

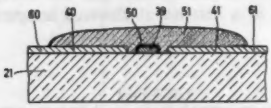
Hein Koelmans, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 14, 1967, Ser. No. 660,253

Claims priority, application Netherlands, Aug. 17, 1966, 6611536

Int. Cl. B44d *1/20*

U.S. Cl. 117—200 15 Claims



A method of manufacturing a semiconductor device. An insultaing substrate is subjected to zinc or cadmium vapor while maintaining the substrate temperature above the temperature at which zinc or cadmium volatilize. A semiconductive material consisting of a sulfide, selenide or telluride of cadmium, zinc or mercury is then deposited on the substrate. Gold or a gold alloy is deposited to form one or more electrical contacts with the chalcogenide material.

3,585,072

DEPOSITION OF A LAYER OF MANGANESE DIOXIDE FROM A PERMANGANATE SOLUTION BY CHEMICAL REDUCTION OF THE PERMANGANATE

William Klasek Templeton, Kernersville, N.C., assignor to Western Electric Company, Incorporated, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 752,478, Aug. 14, 1968. This application May 19, 1969, Ser. No. 826,007

Int. Cl. B44d *1/02*

U.S. Cl. 117—201 38 Claims

A manganese dioxide film is deposited on a workpiece by the chemical reduction of a permanganate and the precipitation of manganese dioxide. The workpiece is immersed in a permanganate solution and a reducing agent, such as methyl alcohol, is added at a gradual rate to the solution to precipitate and deposit manganese dioxide on the workpiece. The permanganate solution is maintained at an acid pH by the addition of concentrated acid to the solution at specified intervals during the deposition.

3,585,073

ELECTRIC FILM RESISTORS

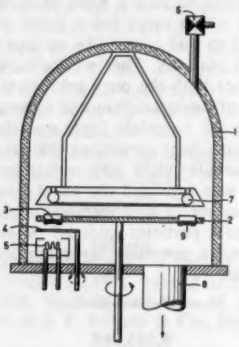
Gustaaf Veenstra, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed June 27, 1968, Ser. No. 740,511

Claims priority, application Netherlands, July 6, 1967, 6709379

Int. Cl. H01b *1/08*

U.S. Cl. 117—201 6 Claims



A method of manufacturing a thin film resistor in which a number of metal layers are applied to an insulating material and each metal layer is completely oxidized before the succeeding layer is applied.

3,585,074

METHOD OF DEPOSITING PHOSPHOR ON CATHODE RAY TUBE TARGET

Margaret J. Jones, Hillsboro, Oreg., assignor to Tektronix Inc., Beaverton, Oreg.

Filed June 14, 1968, Ser. No. 737,026

Int. Cl. H01j *31/08*

U.S. Cl. 117—212 19 Claims

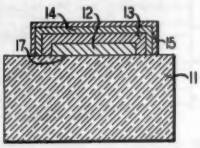
A storage target for a cathode ray tube includes a glass support plate having a multiplicity of depressions into which phosphor storage dielectric is differentially deposited. The target is made by immersing the plate in a volatile liquid medium and fine phosphor particles are dispersed in such medium in a manner to provide turbulent movement of the phosphor particles in the medium. The liquid medium has the property, in combination with the phosphor particles, of causing the phosphor particles

to assume a charge relative to the medium such that the phosphor particles move toward and settle in the aforementioned depressions, while substantially avoiding a target mesh electrode or the like between depressions.

3,585,075
SCHOTTKY BARRIER DIODE

John C. Irvin, Berkeley Heights, and Bertram Schwartz, Westfield, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed Feb. 26, 1969, Ser. No. 802,439
Int. Cl. B44d *1/18*
U.S. Cl. 117—217 **4 Claims**

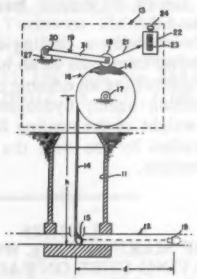


A low work function Schottky barrier diode is obtained by coating a contact region upon a gallium arsenide substrate with a tin halide flux and subsequently depositing tin thereon.

3,585,076
CONDUIT CLEANING APPARATUS

Charles J. Prange, Cridersville, Ohio, assignor to Rockwell Manufacturing Company, Pittsburgh, Pa.

Filed Aug. 29, 1968, Ser. No. 765,229
Int. Cl. B08b *9/04*
U.S. Cl. 134—113 **8 Claims**



A length of flexible hose connected to a source of cleaning fluid is coiled on a rotatable reel and has a discharge nozzle on its free end adapted to be located within and advanced upstream along an underground conduit. A metering roller and indicator assembly carried by a pivoted lever mechanism rests on the top of the coiled hose so that reel rotation drives the roller to operate the indicator. The indicator is resettable to render its reading independent of the vertical distance to the conduit. This informs the operator as to the exact location of the nozzle within the conduit and the exact length of conduit that has been cleaned.

3,585,077
REFORMER FUEL FLOW CONTROL

Elliot I. Waldman, West Hartford, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

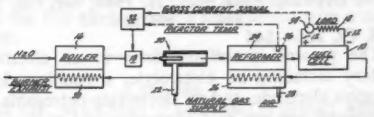
Filed Nov. 19, 1968, Ser. No. 776,954
Int. Cl. H01m *27/00*
U.S. Cl. 136—86 **4 Claims**

A fuel cell control apparatus is disclosed wherein the reformer feed flow is regulated responsive to the hydrogen consumption demands of the fuel cell. The basic mode of operation concerns the control of reformer feed flow as a function of fuel cell gross current and biasing the feed flow as a function of reformer temperature. Flow settings are achieved rapidly through gross current control and the reactor temperature provides a gradual trimming of the flow settings.

3,585,078
METHOD OF REFORMER FUEL FLOW CONTROL

Richard A. Sederquist, Newington, and John W. Lane, East Hampton, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Nov. 19, 1968, Ser. No. 776,955
Int. Cl. H01m *27/00*
U.S. Cl. 136—86 **5 Claims**



A fuel cell control is disclosed wherein the method of regulating the reformer feed flow is responsive to the hydrogen consumption demands of the fuel cell. The basic mode of operation concerns the control of reformer feed flow as a function of fuel cell gross current and biasing the feed flow as a function of reformer temperature. Flow settings are achieved rapidly through gross current control and the reactor temperature provides trimming of the flow settings.

3,585,079
FUEL CELL ELECTRODES HAVING A POLYMERIC METAL-CONTAINING OR METAL-FREE PHTHALOCYANINE CATALYST

Gerhard Richter, Herbert Cnobloch, and Hans-Joachim Henkel, Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Nov. 14, 1968, Ser. No. 775,834
Claims priority, application Germany, Nov. 16, 1967, P 16 71 907.6
Int. Cl. H01m *27/00, 13/00*
U.S. Cl. 136—86A **6 Claims**

A fuel cell comprising an anodic and a cathodic electrode for converting hydrogen and oxygen into fuel elements. The electrodes are characterized in that they are completely or partly comprised of polymeric metal-containing and/or metal-free phthalocyanine, which may be substituted in the core.

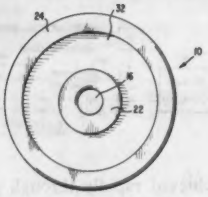
3,585,080
POWER SUPPLY ACTIVATOR

Melvyn I. Morganstein, Adelphi, Md., assignor to the United States of America as represented by the Secretary of the Army

Filed July 30, 1969, Ser. No. 846,093
Int. Cl. H01m *17/06*
U.S. Cl. 136—90 **10 Claims**

Disclosed is a power supply activator for use in a liquid reserve fuze power supply with a center hole. It

releases electrolyte under spin and setback. Concentric inner and outer tubes are joined at one end by an integral diaphragm and at the other end to a lid. Under setback



forces the diaphragm flexes and the outer tube breaks away from the lid to release the electrolyte. Before setback the outer tube is sealed to the lid to minimize leakage.

3,585,081

BATTERY SEPARATOR

Alfred Harris Mirman, 429 5th St., Palisades Park, N.J. 07650

No Drawing. Filed Sept. 16, 1968, Ser. No. 760,097
Int. Cl. H01m *3/02*
U.S. Cl. 136—146 9 Claims

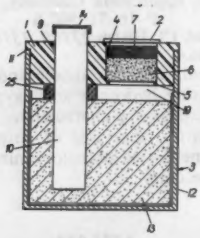
The present invention relates to an electric storage battery including an electrolyte, a positive electrode, a negative electrode, and an electrolyte-permeable separator interposed between said electrodes and comprising a resinous base of a natural rubber, a silicone rubber, a vinylidene polymer, or a fluorocarbon polymer and a vinyl compound graft-polymerized to said resinous base.

3,585,082

VENTED GALVANIC ELEMENT AND DRY CELL

Bruno Siller, Ellwangen, Jagst, Germany, assignor to Varta Pertrix-Union Gesellschaft mbH, Ellwagen, Jagst, Germany

Continuation of application Ser. No. 632,358, Apr. 20, 1967. This application Aug. 27, 1969, Ser. No. 856,879
Claims priority, application Germany, Apr. 23, 1966, V 30,923
Int. Cl. H01m *1/06*
U.S. Cl. 136—178 6 Claims



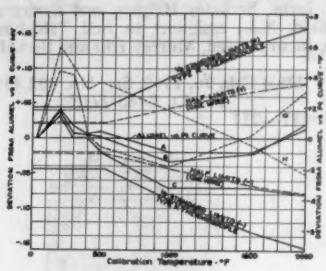
A galvanic element, and particularly a dry cell with a negative electrode designed to serve as the housing of the element or cell, in which a pressure actuated device is provided for venting gases generated in the cell, the device comprising a porous member flooded with a nonvolatile, inert liquid.

3,585,083

NICKEL-SILICON THERMOCOUPLE ELEMENT

Forbes S. Sibley, Troy, and Norman F. Spooner, Bloomfield Township, Oakland County, Mich., assignors to Hoskins Manufacturing Company, Detroit, Mich.

Filed Apr. 21, 1969, Ser. No. 817,703
Int. Cl. H01v *1/22*
U.S. Cl. 136—236 8 Claims



A thermoelement nickel-silicon alloy which is interchangeable with the Alumel element in a Chromel-Alumel thermocouple, the new alloy having a greater resistance to oxidation and a greater EMF stability than Alumel.

3,585,084

PROCESS FOR COATING METALS

Lester Steinbrecher, Southampton, and Wilbur S. Hall, Plymouth Meeting, Pa., assignors to Amchem Products, Inc., Ambler, Pa.

No Drawing. Continuation-in-part of application Ser. No. 554,336, June 1, 1966. This application Jan. 16, 1969, Ser. No. 791,801
Int. Cl. C23f *7/00*; B44l *1/098*
U.S. Cl. 148—6.2 39 Claims

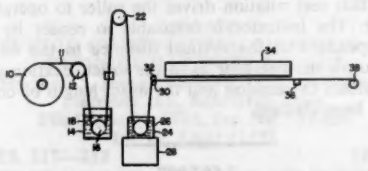
Method for applying a coating to a metallic surface, the surface being immersed in an acidic aqueous coating composition comprising an organic coating-forming material, an oxidizing agent, hydrogen ion and an anion, wherein the weight of the coating formed on the surface can be controlled by the time the surface is immersed in the composition.

3,585,085

PROCESS OF MAKING TAPE WOUND MAGNETIC CORES HAVING CUBE ON FACE ORIENTATION

Joseph F. Fritz and Norman M. Pavlik, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 2, 1969, Ser. No. 812,643
Int. Cl. H01f *3/04, 1/18*
U.S. Cl. 148—110 11 Claims

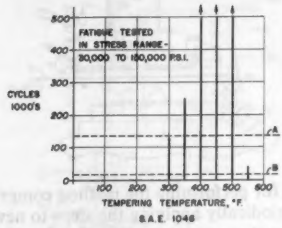


A method is described for producing wound magnetic cores in which the core material is characterized by a cube on face orientation. The steps include coating the material and forming the core to obtain a given space factor followed by heat treatment under controlled conditions to develop a high degree of cube on face orientation.

3,585,086
LEAF SPRING ELEMENTS HAVING HIGH FATIGUE AND WEAR RESISTANCE AND METHOD OF PRODUCING THE SAME

Louis J. Hrusovsky, Bloomfield Hills, Mich., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed June 26, 1968, Ser. No. 740,268
Int. Cl. C21d 9/02
U.S. Cl. 148—145 12 Claims

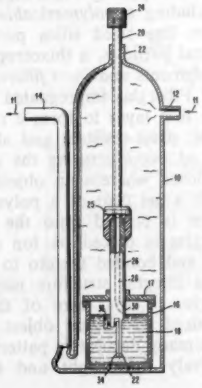


A leaf spring element made of carbon steel having a high degree of fatigue and wear resistance, the spring element being heat treated such that it has a relatively thin surface layer, or rim, of high hardness and relatively high residual compressive stresses. These physical characteristics are provided by quenching the spring element and then tempering it at a temperature selected from within a range of approximately 300° F. to 500° F., the tempering temperature preferably being held for a relatively long period of time.

3,585,087
METHOD OF PREPARING GREEN-EMITTING GALLIUM PHOSPHIDE DIODES BY EPITAXIAL SOLUTION GROWTH

Samuel E. Blum, Bronx, Luther M. Foster, Chappaqua, Kwang K. Shih, Yorktown Heights, and Jerry M. Woodall, White Plains, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 22, 1967, Ser. No. 685,090
Int. Cl. H01l 7/46, 7/38, 7/00
U.S. Cl. 148—171 8 Claims



Green-emitting electroluminescent gallium phosphide diodes are grown by liquid phase epitaxy. A Ga-GaP melt contained in a covered crucible is placed in a vertical furnace. A GaP substrate wafer is inserted into the melt which has been maintained at a temperature of about 1110–1140° C. An n-type GaP layer is produced by the addition of a dopant selected from S, Se, and Te to the melt which is slowly cooled to a temperature of about 1070–1100° C., at which time the melt is counterdoped with an acceptor dopant, e.g., Zn or Cd. The melt is further cooled to about 1030–1060° C., causing the growth of a p-type layer, after which the substrate is removed from the melt and further cooled to ambient temperatures. Electroluminescent diodes are then prepared by thinning the substrate side of the wafer to reduce series resistance. Au-Zn and Au-Sn alloy dots are applied to the p and n side, respectively, of sawed or cleaved sections of the wafer.

Green-emitting diodes prepared by the above method have efficiencies of about 2.7×10^{-4}, which efficiencies can be improved by a factor of 2 or more by coating the diodes with anti-reflective epoxy coatings. The diodes find utility as panel indicators.

3,585,088
METHODS OF PRODUCING SINGLE CRYSTALS ON SUPPORTING SUBSTRATES

Guenter H. Schwuttke, Poughkeepsie, and James K. Howard, Fishkill, N.Y., and Rupert F. Ross, Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 16, 1968, Ser. No. 768,664
Int. Cl. H01l 7/36, 7/38, 7/54
U.S. Cl. 148—174 10 Claims

A method of producing oriented crystal overgrowth on a monocrystalline or amorphous substrate wherein a film of crystalline material is deposited on the substrate and regions of the film are selectively bombarded with a laser beam pulse.

3,585,089
METHOD OF MAKING FAST SWITCHING SEMICONDUCTIVE DEVICES WITH SILICON NITRIDE PASSIVATION

John B. Preece, Hauppauge, N.Y., and Winand J. Dautzenberg, Laurel, Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 24, 1969, Ser. No. 835,963
Int. Cl. H01l 7/36
U.S. Cl. 148—187 5 Claims

Silicon nitride passivation, preferably with a sub-layer of silicon dioxide, is disclosed for fast switching (gold doped) semiconductor devices in a process wherein nitride deposition and pattern formation is completed prior to gold doping so the nitride layer is of good quality and readily etched.

3,585,090
INHIBITING SURFACE OXIDATION OF SOLID PROPELLANTS BY ADDING KETOXIMES

David C. Sayles, Huntsville, Ala., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Mar. 14, 1966, Ser. No. 535,649
Int. Cl. C06d 5/06
U.S. Cl. 149—19 6 Claims

The method of inhibiting changes that occur during storage at the surface of solid propellant grains that have a binder with unsaturated linkages, the method involving incorporating a ketoxime in the propellant composition from which the grain is made.

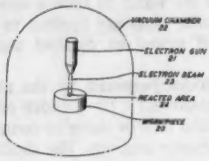
3,585,091
METHOD FOR ETCHING THIN LAYERS OF OXIDE OR NITRIDE

Martin P. Lepselter, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed Dec. 8, 1967, Ser. No. 689,090
Int. Cl. C23f 1/02; H01l 7/00
U.S. Cl. 156—16 2 Claims

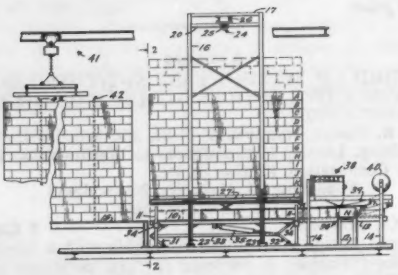
This application discloses a method for selectively etching a thin oxide or nitride layer on a semiconductive

body. In particular, an oxide or nitride layer is selectively etched by depositing a thin layer of an active metal upon it, inducing a chemical reduction reaction between the



active metal and the oxide or nitride in selected areas, and selectively removing the more readily dissolved reacted areas.

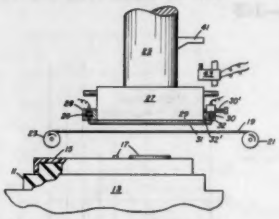
3,585,092
APPARATUS AND METHOD FOR FABRICATING WALL SECTIONS
Robert L. Storer, Toledo, Ohio, assignor to S. A. Storer & Sons Company, Toledo, Ohio
Filed Sept. 29, 1969, Ser. No. 861,945
Int. Cl. B32b *31/20;* **E04g** *21/14*
U.S. Cl. 156—182 **17 Claims**



An apparatus for constructing modular sections of concrete block or brick walls which sections are subsequently transported to the construction site and installed. The apparatus includes a horizontal bed upon which each course or row of blocks is assembled with head and bed mortar applied thereon. Above the horizontal bed is a clamp and support frame which engages the faces of the previously formed row to hold it above the horizontal bed. An elevating mechanism is provided to raise the horizontal bed to force the row thereon into engagement with the row above held by the clamps and, upon release by the clamps, to raise the bottom row and previously formed upper rows to a position where the clamps will engage the newly formed bottom row. The method of the apparatus is to construct the wall section from the top down by adding new rows under those already formed until the desired section height has been attained.

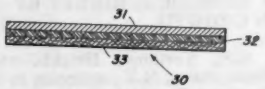
3,585,093
METHOD AND APPARATUS FOR APPLYING METAL FOIL
Andrew B. Britt, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 9, 1967, Ser. No. 681,675
Int. Cl. B44c *1/24*
U.S. Cl. 156—234 **15 Claims**

A method of adhering or securing metal foil coated with an adhesive bonding agent to a surface of an article which includes pressing the metal foil against the surface with the adhesive in contact with the surface while the foil is at ambient temperature, then causing the metal foil to adhere to the surface by the application of a heat pulse for a short period of time, and then allowing the coated surface to cool while maintaining pressure thereon.



Apparatus for performing the method comprising mechanism for periodically applying the steps to newly inserted articles, and automatic control mechanism for actuating pressing, heating, and timing devices; and for actuating a foil indexing device to move a new area of foil into register with each newly inserted article.

3,585,094
METHOD OF MAKING MOLDED MULTI-PLY FLEXIBLE LAMINATES
Kay L. Ruggles, Salt Lake City, Utah, assignor to American Standard Inc., New York, N.Y.
Filed July 2, 1968, Ser. No. 742,014
Int. Cl. B29d *21/02;* **B29g** *5/00;* **B32b** *17/04*
U.S. Cl. 156—245 **6 Claims**

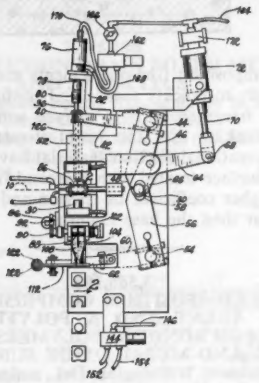


A multi-ply flexible material for the manufacture of various objects which are stress-subjected and/or have curvilinear surfaces, such as decorative planters, counter tops, wall panels, furniture, plumbing fixtures, etc. formed from a combination comprising a first layer composed of setting mixture including a *polymerizable thermosetting plastic composition,* fine sized silica particles, random sized colored mineral particles, a thixotropic agent, compatible inorganic pigments and *inert fillers,* and a second layer composed of Fiberglas impregnated with polyester and bonded to the first layer to form a relatively rigid, lightweight, flexible, stress-resistant and abusive-resistant object. A *method of manufacturing* the stress-subjected object is also disclosed wherein an object mold is uniformly coated with a gel coat of a polyester resin and the setting mixture is poured onto the coat and the impregnated Fiberglas is placed on top of the coating of setting mixture and bonded thereto to form an integral structure. The integral structure may be removed from the mold prior to final cure of the resin to be formed into a desired curvilinear object. The building material may have many decorative patterns and designs thereon, be relatively lightweight and economical to manufacture.

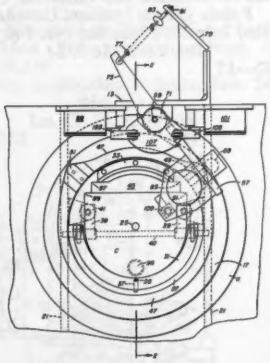
3,585,095
SYSTEM FOR PRODUCING GROMMET BAGS
George E. Shearhod, Hoffman Estates, Ill., assignor to Vision Wrap Industries, Inc., Schiller Park, Ill.
Filed July 11, 1968, Ser. No. 744,142
Int. Cl. B32b *31/10, 31/18;* **B26d** *5/20*
U.S. Cl. 156—513 **10 Claims**

An apparatus for forming grommet bags wherein grommets are heat sealed to bag material by means of a

pair of movable tools, one of which includes a movable piercing element whereby the tools are adapted to substantially simultaneously form openings in the grommets and bag material during application of the grommets to the bag. Drive means for the tools comprise a first pneumatic cylinder for driving the opposed tools and a second pneumatic cylinder for operating the piercing element independently of the tool driving means. Electrically operated valves are associated with the respective pneumatic cylinders, and switching controls for the valves are operatively connected to the drive means employed for moving bag material through the apparatus.

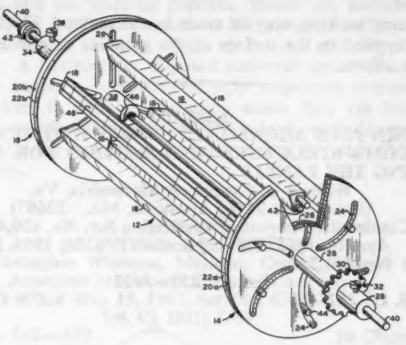


3,585,096
ULTRASONIC WELDING APPARATUS
Alex Uhimchuk and Paul A. Burgo, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed May 12, 1969, Ser. No. 823,702
Int. Cl. B29c *27/08;* B32b *31/16;* B30b *1/32*
U.S. Cl. 156—580 **11 Claims**



Apparatus for ultrasonically welding a plastic top on a plastic box wherein the box rotates with a turntable while an ultrasonic horn is guided around the periphery by a rotating cam. An automatic control system provides for clamping the box, starting and stopping rotation, turning the ultrasonic horn on and off selectively, and expelling the box upon completion of the welding operation.

3,585,097
EXPANDABLE DRUM AND HEAT SEALING MEANS
Elmer C. Beason, Cincinnati, Ohio, assignor to Phillips Petroleum Company
Filed May 22, 1968, Ser. No. 731,249
Int. Cl. B30b *15/34;* B32b *31/20*
U.S. Cl. 156—583 **3 Claims**



In a drum the circumference may be varied by moving the side segments of the drum in a radial direction. The sides of the drum are made up of a series of side segments and each of the two end members of the drum is made up of a pair of end plates. One end plate in each pair of end members has a series of straight slots and the other end plate of that pair has a series of arcuate slots. By rotating one end plate with respect to the other end plate in each end member, the side segments which have been fitted into the slots will move in a radial direction thereby varying the circumference of the drum.

3,585,098
SURFACE PILE FABRIC AND ITS METHOD OF MANUFACTURE
Wayne R. Truscott, Delavan, and Harry A. Freedman, Beloit, Wis., assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed Aug. 29, 1967, Ser. No. 664,017
Int. Cl. D03d *27/00*
U.S. Cl. 161—63 **6 Claims**

An improved surface pile fabric which is comprised of a base fabric and pile fibers intertwined with the base fabric and extending therefrom to provide a pile which has been irregularly disoriented into an improved surface pattern as a result of the relaxation of stresses in the fibers under the impingement of heat and fluid pressure for a given period of time. The method of manufacture of this improved surface fabric is such that the pile fibers may all have substantially the same disorientation characteristics.

3,585,099
PLASTIC SHEET MATERIAL HAVING TEXTURED SURFACE
Edward C. Van Buskirk, South Bend, Ind., assignor to Uniroyal, Inc., New York, N.Y.
Filed May 18, 1967, Ser. No. 639,355
Int. Cl. B44c *3/00;* D03d *27/00;* D04h *11/08*
U.S. Cl. 161—63 **7 Claims**

Plastic sheet material having a textured, granular, relief surface is made, without necessity for resorting to surface molding or embossing to provide the relief effects, by par-

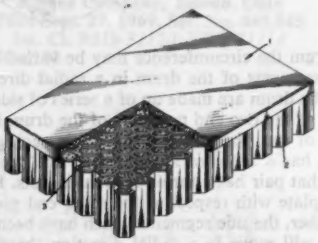
tially embedding vinyl resin granules in the surface of a vinyl plastisol base layer. Contoured automobile mats, or flat sheet goods with or without a textile or other reinforcing backing, may be made by the method. Flock may be applied to the surface of the granules to give textile-like effects.

3,585,100

RESIN PLUS AGGREGATE PANELS WITH HONEYCOMB STRUCTURE AND METHOD FOR MAKING THE PANELS

William D. Greenlees, Alexandria, Va.
(Rte. 1, Box 711L, Accokeek, Md. 20607)

Continuation-in-part of application Ser. No. 450,675, Apr. 26, 1965. This application Feb. 11, 1969, Ser. No. 801,241
Int. Cl. B32b *3/12*
U.S. Cl. 161—68 9 Claims



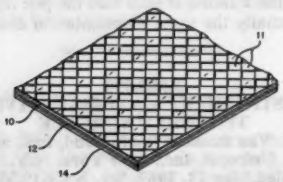
Molded panels and the method of manufacturing the panels are disclosed. The panels consist of resin plus aggregate with a honeycomb structure imbedded in the resin-aggregate mixture. The panels are light weight, have a surface hardness equivalent to marble, can be produced in any color, can be made to have a marble like appearance, and are moisture resistant. Briefly, the panels are manufactured by mixing the aggregate and resin along with the desired dye in a mixer; the mix is poured into a mold that is vibrated during pouring; after the mold is filled, the honeycomb is pressed into the back of the mix; the mold is then placed in an evacuated heat chamber; removed from the heat chamber and placed in a heat tunnel. After the mold travels the length of the heat tunnel, it is cooled and the panel is removed.

3,585,101

ADHESIVE-APPLIED KNURLING

Dana D. Stratton, 152 Hillview Drive, Springfield, Pa. 19064, and Sidney Hirsch, 8108 Hawthorne Lane, Elkins Park, Pa. 19117

Filed July 25, 1968, Ser. No. 747,518
Int. Cl. B32b *3/00, 7/06, 7/12*
U.S. Cl. 161—116 3 Claims



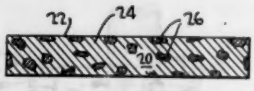
A thin sheet of a soft, flexible material having a knurled pattern embossed on its top surface is mounted on a solid, smooth object using a suitable adhesive bond material to provide an improved gripping surface therefor.

3,585,102

RAPID SEATING FRICTION ELEMENTS

Bernard Lee Burgess, 3600–3608 Jacob St., Wheeling, W. Va. 26003

Filed Aug. 7, 1968, Ser. No. 750,891
Int. Cl. B32b *5/16, 19/08;* F16d *69/02*
U.S. Cl. 161—162 2 Claims



Novel composition friction elements are disclosed having the ability to quickly seat-in and conform to the contour of an irregular braking surface without fading or sacrificing braking life. The novel elements comprise a base of conventional friction material having a frictional contacting surface treated with a second friction material having a higher coefficient of friction and a lower resistance to wear than the base material.

3,585,103

PRIMING COMPOSITION COMPRISING A COUPLING AGENT AND A POLYFUNCTIONAL AZIDE FOR BONDING POLYMERS TO GLASS, METAL AND METAL OXIDE SUBSTRATES

J. Brent Thomson, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Sept. 23, 1968, Ser. No. 761,848
Int. Cl. B32b *15/04, 17/06*
U.S. Cl. 161—191 19 Claims

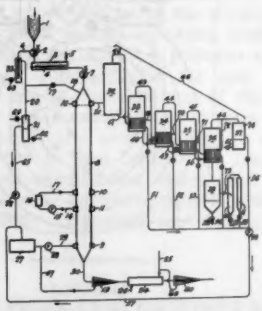
It has been found that polymers can be made to adhere more firmly to glass, metal and metal oxides by first conjointly treating the substrate with (1) a coupling agent selected from the group consisting of organosilanes, ethylenically unsaturated carboxylic acid chromium chloride complexes, unsaturated carboxylic acids and anhydrides, and unsaturated organophosphorus compounds, and (2) a polyfunctional azide. A polymer may be bonded to the thus treated glass, metal or metal oxide immediately after such treatment or at some later date.

3,585,104

ORGANOSOLV PULPING AND RECOVERY PROCESS

Theodor N. Kleinert, 120 Embleton Crescent, Pointe Claire, Quebec, Canada

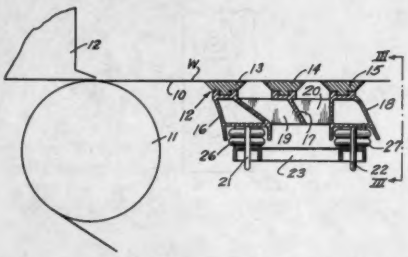
Filed July 29, 1968, Ser. No. 748,320
Int. Cl. D21c *3/24*
U.S. Cl. 162—17 8 Claims



A process is provided for pulping subdivided fibrous plant material, using as pulping agent a mixture of water and a water miscible, volatile organic solvent for example ethanol. The digestion is carried out in a countercurrent manner, the subdivided fibrous plant material being immersed in the pulping liquor at an elevated

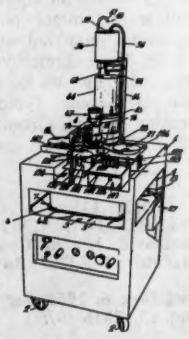
temperature and pressure. The spent cooking liquor is recovered from the digester and is conducted at approximately the pulping conditions of temperature and pressure into a multistage flash evaporator from which the organic solvent is recovered continuously and can be recycled for make-up of the pulping liquor. The multistage flash evaporation also permits recovery of lignin and water soluble components containing sugars, oligosaccharides and organic acids.

3,585,105
ANTI-DEFLECTION DRAIN BOARD METHOD AND APPARATUS
Louis M. Stuebe, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.
Filed May 26, 1967, Ser. No. 641,568
Int. Cl. D21f *1/00*
U.S. Cl. 162—211 **13 Claims**



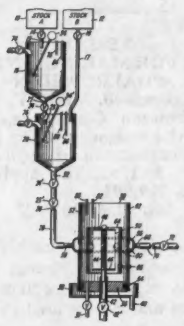
The deflection of a forming board relative to a breast roll in a papermaking machine is controlled positively by the method of the application of a force along the length of the forming board by bellows, by temperature differential achieved through separate containers for liquid, or by the weight of fluid in a tank, and deflection in the machine direction of movement of the forming wire is controlled by sliding guides.

3,585,106
APPARATUS FOR AUTOMATICALLY PRODUCING TEST SHEETS FROM PAPERMAKING PULPS
Ola Sepall, 220 Grande Allee; Leonard N. Stanners, 870 St. Louis Road; and Bruno Tremblay, 1141 Labarre, all of Quebec City, Quebec, Canada
Continuation-in-part of application Ser. No. 543,320, Apr. 18, 1966. This application Sept. 4, 1969, Ser. No. 855,348
Claims priority, application Canada, Jan. 24, 1966, 950,564
Int. Cl. D21f *13/00*
U.S. Cl. 162—252 **5 Claims**



The invention relates to an automatic device for producing paper test sheets for evaluating physical properties of papermaking pulps. In the apparatus, there is arranged in a circular path a pick-up area for transferring an absorbent couching sheet, a test sheet forming screen, and a stacking area for depositing completed test sheets. A centrally located rotatable column has an extending arm with a flat, porous member attached thereto, suitably arranged so that the porous member can be consecutively positioned over the couch sheet pick-up position, the sheet forming position and the stacking position. Means are provided for applying a partial vacuum to the porous member to cause the couch sheet to adhere to it when effecting the transfer. A horizontally disposed conveyor means is utilized to supply a succession of pulp suspension containing beakers to a dumping station where they are individually emptied into a means which feeds each dumped aliquot to the test sheet forming screen for test sheet formation.

3,585,107
ACCRETION APPARATUS
John Covington Williams, Meriden, Conn., assignor to American Machine & Foundry Company
Filed May 15, 1967, Ser. No. 638,277
Int. Cl. D21j *7/00*
U.S. Cl. 162—387 **10 Claims**



Herein is disclosed apparatus for treating particulate matter in a liquid vehicle into formed shapes. A receptacle is provided in which the particulate matter and liquid vehicle is fed. Within the receptacle there is maintained a foraminous former through which a vacuum is drawn so as to cause the deposition of particulate material thereon.

3,585,108
TRANSMISSIBLE GASTROENTERITIS VACCINES AND METHODS OF PRODUCING THE SAME
Clarence J. Welter, Des Moines, Iowa, assignor to Diamond Laboratories, Inc., Des Moines, Iowa
No Drawing. Application Aug. 24, 1967, Ser. No. 671,526, which is a division of application Ser. No. 398,398, Sept. 22, 1964, now Patent No. 3,479,430, dated Nov. 18, 1969. Divided and this application July 14, 1969, Ser. No. 841,607
Int. Cl. C12k *5/00, 7/00*
U.S. Cl. 195—1.3 **2 Claims**

Transmissible gastroenteritis virus is grown and propagated in tissue cultures by inoculating virulent virus particles into a first tissue culture, allowing the virus to grow, introducing the viral particles into other tissue cultures until a continuated virus is obtained. A final virus culture can be harvested and combined with a stabilizer and further incubated to inactivate the virus. Sows and their nursing pigs can be immunized by injecting into the pregnant sow before farrowing the vaccine thus produced.

3,585,109
NOVEL PROCESS OF PRODUCING L(+)-TARTARIC ACID
Koichi Yamada, Tokyo, Yasuji Minoda, Chiba, and Tohru Kodama and Uichiro Kotera, Tokyo, Japan, assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Filed Mar. 3, 1969, Ser. No. 803,957
Int. Cl. C12d *1/06*
U.S. Cl. 195—47 1 Claim

L(+)-tartaric acid is produced in higher yield by the use of *Gluconobacter suboxydans* on a medium containing more than 0.1 mg./l. of pantothenic acid.

3,585,110
PROCESS FOR PREPARING 1-DEHYDRO STEROIDS
Dewey D. Y. Ryu, North Brunswick, Bong K. Lee, Old Bridge, and Richard W. Thoma, Somerville, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 772,382, Oct. 31, 1968. This application July 1, 1970, Ser. No. 51,710
Int. Cl. C07c *167/14*
U.S. Cl. 195—51 10 Claims

Disclosed herein is a process for preparing steroids unsaturated in the 1,2-position by utilization of concentrated nutrient and steroid substrates, added intermittently, so that the concentration of enzyme with cells and steroid product are increased by a large factor and an optional steroid cell ratio is maintained.

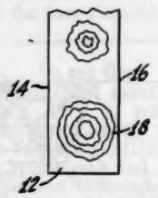
3,585,111
PROCESS FOR MAKING ANTIBIOTIC SPHAEROPSIDIN
John H. Coats, Kalamazoo, Milton E. Herr, Kalamazoo Township, Kalamazoo County, and Ross R. Herr, Kalamazoo, Mich., assignors to The Upjohn Company
No Drawing. Continuation of application Ser. No. 506,853, Nov. 8, 1965. This application Mar. 4, 1968, Ser. No. 709,901
Int. Cl. C12d *9/22*
U.S. Cl. 195—81 2 Claims

Antibiotic sphaeropsidin producible by culturing a fungus belonging to the class Fungi imperfecti, genus Phoma, in an aqueous nutrient medium. Sphaeropsidin is an antifungal agent and can be used in shoe uppers.

3,585,112
BIOLOGICAL STERILITY INDICATOR AND METHOD FOR MAKING AND USING SAME
Robert R. Ernst, Rochester, N.Y., assignor to Sybron Corporation
Application Oct. 23, 1965, Ser. No. 503,987, now Patent No. 3,346,464, which is a continuation-in-part of application Ser. No. 272,035, Apr. 10, 1963. Divided and this application July 14, 1967, Ser. No. 653,414
The portion of the term of the patent subsequent to Oct. 10, 1984, has been disclaimed
Int. Cl. G01n *33/00*
U.S. Cl. 195—103.5 6 Claims

A biological sterility indicator including a sealed semi-permeable envelope **10** being permeable to water and impermeable to bacteria in either liquids or gases, a selected quantity of suitable unincubated test organism **12**, and growth media **18** and dye indicator **20**, all preferably sealed within the envelope. The indicator is rendered suitable for testing multiple types of sterilizing media by utilizing multiple types of test organisms, each of which is sufficiently resistant to at least one of such sterilizing media thereby to yield an accurate test of all such sterilizing media.

3,585,113
PROCESS FOR FABRICATING REPLICATING MASTERS
Charles Harry Fletcher Morris, Jr., Allentown, N.J., assignor to RCA Corporation
Filed Sept. 29, 1969, Ser. No. 861,629
Int. Cl. B51c *3/08*; C26b *7/00*; B29c *17/08*
U.S. Cl. 204—6 7 Claims



The method for making a metal master having a phase hologram relief pattern in a surface thereof includes the steps of electrolessly plating the uniform thin metal coat-over the surface of a tape having a hologram relief pattern on a first surface thereof and a smooth second surface, masking the second surface of the tape and then electroplating a metal coating onto the unmasked surfaces of the tape. Thereafter, the electroplated metal coating which lies over the first surface of the tape is masked and then the metal coatings which formed around the edges of the tape are removed. The remaining metal coating is then separated from the tape so as to provide a metal master.

3,585,114
TIN PLATING BATH HAVING ORGANIC COMPOUND
Henry K. Wren and William T. Hobson, Indianapolis, Ind., assignors to the United States of America as represented by the Secretary of the Navy
No Drawing. Filed May 14, 1969, Ser. No. 824,669
Int. Cl. C23b *5/14, 5/46*
U.S. Cl. 204—54 5 Claims

A bath for tin plating having an aqueous acidic solution of stannous sulfate and minor proportion of an organic dye which provides improved solderability of a part plated in said bath. The organic dye colors the tin plating bath to permit color analysis for replenishing the dye during use of the plating bath. Typical of such dyes are safranine O, safranine T, Janus Green B, Janus Black, Janus Gray, Janus Blue G, Janus Red and Janus Yellow.

3,585,115
PROCESS FOR ELECTROWINNING SELENIUM
Walter B. Davis, deceased, late of Conover, N.C., by Ruth B. Davis, executrix, R.F.D. 2, Box 150, Conover, N.C. 28613
No Drawing. Filed June 6, 1969, Ser. No. 832,041
Int. Cl. C01b *19/00*
U.S. Cl. 204—128 15 Claims

When the perparation of an electrolyte from which selenium is to be recovered includes the step of adding

boric acid and digesting at a moderately elevated temperature approximately 165° F. for about 30 minutes, the evolution of toxic gases is inhibited.

3,585,116
PHOTOCHEMICAL BLEACHING OF OLEFIN SULFONATES

Ted J. Logan, Colerain Township, Hamilton County, and Paul J. Kropp, Springfield Township, Hamilton County, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Nov. 4, 1968, Ser. No. 773,353
Int. Cl. B01j *1/10*
U.S. Cl. 204—158R 9 Claims

The process for decolorizing sulfonated α-olefin reaction products which comprises irradiating a solution of sulfonated α-olefin or hydrolysate thereof with electromagnetic radiation in the range of about 2,000 to about 7,000 angstroms in the presence of hydrogen peroxide and a solvent having low absorptivity for irradiation. The decolorized sulfonated α-olefin reaction products are excellent detergent compounds and are adapted to application in detergent formulations which are substantially white in appearance.

3,585,117
CHLORINATION OF HOMOPOLYMERS OR COPOLYMERS OF VINYL CHLORIDE AND/OR ETHYLENE IN SUSPENSION IN THE PRESENCE OF DIMETHYLSULFOXIDE

Wilhelm Gresser, Troisdorf, and Gunther Meyer, Sieglar, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

No Drawing. Filed July 24, 1968, Ser. No. 747,131
Claims priority, application Germany, Aug. 25, 1967, D 53,929
Int. Cl. B01j *1/00*; C08f *1/00*
U.S. Cl. 204—159.18 10 Claims

Process for chlorinating homopolymers or copolymers of vinylchloride and/or ethylene in aqueous suspension, preferably containing hydrochloric acid or sulfuric acid, at a temperature of 0 to 100° C., under action of ultraviolet light, characterized in that dimethyl sulfoxide, in an amount of from 0.03 to 20% referred to the amount of polymer, is used as the swelling agent.

3,585,118
PROCESS FOR THE BULK PHOTOCOPOLYMERIZATION OF POLYAMINESULFONES

Susumu Harada and Kunio Arai, Koriyama-shi, Japan, assignors to Nitto Boseki Co., Ltd., Fukushima-shi, Japan

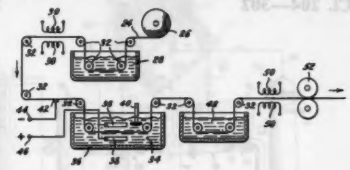
Filed Nov. 13, 1969, Ser. No. 876,386
Claims priority, application Japan, Nov. 18, 1968, 43/83,753
Int. Cl. B01f *11/00*; C08d *1/00*; C08f *1/16*
U.S. Cl. 204—159.22 18 Claims

An improved process for producing polyaminesulfones which comprises irradiating an equimolar or substantially equimolar mixture of a diallylamine derivative and sulfur dioxide with a light containing rays having a wave length of 300 to 450 mμ to bulk-photocopolymerize the mixture. According to this process, polyaminesulfones can easily be obtained in high yields. Since the above-mentioned mixture is a heat-stable, viscous liquid, it can be continuously extruded through a slit or nozzle in the form of a film or sheet and can be continuously polymerized by continuous application of the above-mentioned light. As the said light, there may usually be used sunlight or the light from a fluorescent lamp. The irradiation of light is effected at a temperature ranging from −100° C. to 100° C., preferably from −50° C. to 50° C.

3,585,119
METHOD FOR MAKING A BATTERY ELECTRODE

Victor J. Schneider, Norton, and Pranjivan V. Popat, Attleboro, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed July 20, 1967, Ser. No. 654,745
Int. Cl. B01k *5/02*; C23b *13/00*
U.S. Cl. 204—181 12 Claims

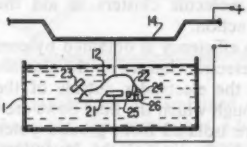


A battery electrode is made by immersing an electrically conductive electrode substrate and a counter electrode in a bath comprising a suspension of a metal oxide powder such as cadmium oxide powder in an aqueous alkaline electrolyte and by establishing an electrical field between the substrate and counter electrode for depositing the powder on the substrate and for converting the powder to an electrochemically active material such as cadmium metal to form a porous electrode structure.

3,585,120
NOVEL METHOD OF ELECTROCOATING HOLLOW BODIES

Felix Wehrmann and Franz Aigner, Vienna, Austria, assignors to Stollack Aktiengesellschaft, Guntramsdorf, near Vienna, Austria

Filed Sept. 5, 1968, Ser. No. 757,565
Claims priority, application Austria, Sept. 8, 1967, A 8,249/67
Int. Cl. B01k *5/02*; C23b *13/00*
U.S. Cl. 204—181 12 Claims



A method of electrocoating the interior of hollow objects requiring a coating of a water-soluble or water-dispersible coating agent which objects have at least an electrically conductive surface wherein the improvement resides in the use of at least one bipolar auxiliary electrode which extends into the interior of the hollow object.

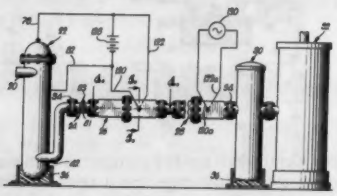
3,585,121
DIFFRACTION GRATINGS

Albert Franks, London, and Kevin Lindsey, Surbiton, Surrey, England, assignors to National Research Development Corporation, London, England

Filed Nov. 14, 1968, Ser. No. 775,866
Claims priority, application Great Britain, Nov. 17, 1967, 52,515/67; Mar. 8, 1968, 11,433/68
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 8 Claims

A method of making diffraction gratings, particularly X-ray diffraction gratings, in which those parts of the grating that form the bottoms of diffracting grooves below the general optically smooth surface of the grating are subjected to an electrical etching process.

3,585,122
APPARATUS FOR TREATMENT OF FLUIDS WITH ELECTRIC FIELDS
Arthur S. King, 6836 Fontana, Prairie Village, Kans. 66208
Continuation-in-part of application Ser. No. 613,616, Feb. 2, 1967. This application May 9, 1968, Ser. No. 727,835
Int. Cl. B03c *5/00*; B01d *13/02*
U.S. Cl. 204—302 **29 Claims**



Fluids, such as water, are subjected to an electrostatic field between a pair of spaced, oppositely charged electrodes, one of the latter being insulated from the fluid while the other electrode is in contact with the fluid. Depending upon the effect desired, the fluid may then be treated by flowing the same between a second pair of spaced, oppositely charged electrodes, both of these electrodes being insulated from the flowing fluid. As a further optional treatment, the fluid is caused to flow between another pair of spaced, insulated electrodes, the latter being connected to a source of alternating potential to establish an alternating electric field between the electrodes. Water subjected to the initial electrostatic treatment undergoes a reduction in surface tension and apparent neutralization of charged, dissolved particles therein. The subsequent field treatments, it is believed, effects nucleation or coagulation of dissolved impurities and breaks molecule clusters to aid the nucleation or coagulation action.

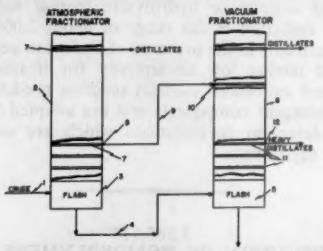
Maximum efficiency is obtained by controlling the distribution of electric charges on the electrodes; sharp edges or bends in the electrodes outside of the regions therebetween through which the fluid flows are avoided and the electrodes are isolated from ground potential. In tubular electrode embodiments of the invention, insulated supports are employed to provide greater spacing between the oppositely charged electrodes outside of the fluid flow region than within such region in order to concentrate the electric charges on the electrodes within the region of fluid flow so that fluid is subjected to the greatest charge density.

Suspended and nucleated or coagulated matter may be removed from the fluid after the electric field treatments through the use of a filter or, alternatively, by discharging the fluid against an electrically conductive surface at ground potential maintained at a temperature different from that of the fluid. This latter method causes the suspended and nucleated or coagulated matter to be deposited from the fluid and thus readily permits separation and removal.

3,585,123
ACYLATED HYDROCARBON SUCCINATES AND USES THEREOF
Richard L. Godar and Michael I. Naiman, St. Louis, Mo., assignors to Petrolite Corporation, Wilmington, Del.
No Drawing. Filed Nov. 18, 1968, Ser. No. 776,808
Int. Cl. C10g *9/16*; C08f *3/70*
U.S. Cl. 208—48 **10 Claims**

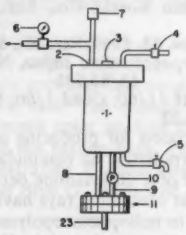
Acylated hydrocarbon succinates and derivatives thereof, formed by (1) reacting a hydrocarbon with a maleic compound or a derivative thereof under free radical conditions to yield a hydrocarbon succinate and then (2) reacting the hydrocarbon succinate with a polyamine to form an acylated product, i.e. amides, imides, amide-imides, etc.; and to the uses of these acylated hydrocarbon succinates, for example as antifoulants to inhibit deposit formation in high temperature hydrocarbon systems such as in refineries, etc.

3,585,124
CASCADED MULTISTAGE DISTILLATION DESIGN AND OPERATION
Hugh L. Myers, Springfield, Pa., assignor to Sun Oil Company, Philadelphia, Pa.
Filed Oct. 22, 1968, Ser. No. 769,515
Int. Cl. C10g *7/00*
U.S. Cl. 208—354 **5 Claims**



An improved manner of operating a cascaded multistage distillation, for example, in crude oil distillation, by operating the flash of one fractionator to obtain a relatively high cut point, charging the bottoms of said unit to the next fractionator, recovering a relatively heavy fraction at an intermediate point of the first of said fractionators, and charging the said heavy fraction at conditions not above its bubble point to an intermediate point on said next fractionator, said intermediate point on said next fractionator being where the liquid distillate composition in the fractionator closely approximates the composition of the charge stream from said first of said fractionators.

3,585,125
DESALINATION PROCESS USING N-3-HYDROXYALKYL ACRYLAMIDE POLYMER MEMBRANES
Donald I. Hoke, Chagrin Falls, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio
Continuation-in-part of application Ser. No. 713,787, Mar. 18, 1968. This application Jan. 3, 1969, Ser. No. 788,820
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 **10 Claims**



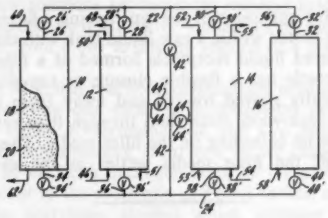
N-3-hydroxyalkyl acrylamides, and substituted derivatives thereof, are prepared by (1) reduction of an N-3-oxohydrocarbon-substituted acrylamide, (2) addition of an alcohol to the N-3-oxohydrocarbon-substituted acrylamide, followed by hydrogenation of the carbonyl group and elimination of the alcohol, or (3) hydrolysis of a 2-vinyl-5,6-dihydro-1,3-oxazine. The acrylamides are useful as monomers for conversion to polymers with a number of interesting properties, including utility as membranes

for desalination of water by hyperfiltration. The polymers may be crosslinked by the action of such reagents as diisocyanates, dicarboxylic acid halides, and aldehydes in acidic solution.

3,585,126
CELLULOSE MIXED ESTER REVERSE OSMOSIS MEMBRANE AND ITS USE
Charles R. Cannon, Baldwin Park, and Paul A. Cantor, West Covina, Calif., assignors to Aerojet-General Corporation, El Monte, Calif.
No Drawing. Filed Feb. 19, 1969, Ser. No. 800,751
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 **5 Claims**

A reverse osmosis membrane prepared from mixed esters of cellulose, for example, cellulose acetate propionate, cellulose acetate isobutyrate, cellulose acetate maleate, and cellulose acetate methacrylate. The properties of membranes containing an unsaturated ester may be altered by cross-linking through the unsaturated group. The degree of total ester substitution is desirably in the range of 2.4 to 2.8, preferably in the range of 2.5 to 2.7.

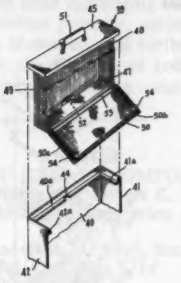
3,585,127
METHOD FOR TREATING WATER BY ION EXCHANGE
Eli Salem, Brooklyn, N.Y., assignor to Ecodyne Corporation, Chicago, Ill.
Filed Sept. 18, 1969, Ser. No. 859,042
Int. Cl. B01d *15/06*; **C02b** *1/68*
U.S. Cl. 210—32 **18 Claims**



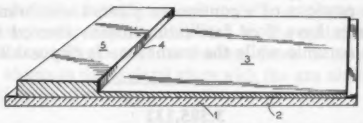
A method is provided for the treatment of water by ion exchange while eliminating leakage. In carrying out the method, water is first passed through a service layer of anion and cation exchange resins in a service zone in the conventional manner. Subsequently, the water is passed through a leakage barrier layer of cation exchange resin in the service zone. Periodically, the resins in the service zone are separated in a separation zone. The anion exchange resin is then regenerated in an anion resin regeneration zone, and the cation exchange resin is regenerated in a cation resin regeneration zone, which preferably also serves as the separation zone. A portion of the cation exchange resin is then transferred to the service zone to establish a leakage barrier layer. The remainder of the cation exchange resin is mixed with the anion exchange resin, and the mixed resins are transferred to the service zone to establish a service layer of anion and cation exchange resins.

3,585,128
PRE-WASH SCRAP BASKET FOR DISHWASHER
Roger Long Hoffman, Pequannock, N.J., assignor to General Electric Company
Filed July 28, 1969, Ser. No. 845,308
Int. Cl. B01d *35/02*
U.S. Cl. 210—152 **9 Claims**

A pre-wash scrap basket for use primarily in commercial dishwashing machines having a pre-wash section, the basket being mounted externally of the pre-wash section on the front of the machine for easy access and being fitted with a handle, rear bracket, and "snap-in" feature for easy removal and correct re-insertion, the basket itself being of a one-piece rectangular construction with all walls thereof except the top which is solid being formed from a screen-type straining material, one wall of the basket being provided with an opening to allow entry into the basket of water bearing the refuse initially removed from the dishes in the pre-wash section of the dishwashing machine whereby the refuse is deposited within the basket and the water escaping through the strainer-walls of the basket is allowed to recirculate through the pre-wash section of the dishwashing machine.

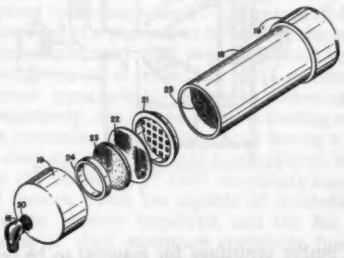


3,585,129
DUAL THICKNESS TLC PLATES AND DEVICE THEREFOR
Norman E. Delfel, Peoria Heights, Ill., assignor to the United States of America as represented by the Secretary of Agriculture
Original application Nov. 14, 1967, Ser. No. 683,439, now Patent No. 3,522,792, dated Aug. 4, 1970. Divided and this application Mar. 28, 1969, Ser. No. 835,835
Int. Cl. B01d *15/08, 15/06*
U.S. Cl. 210—198C **1 Claim**



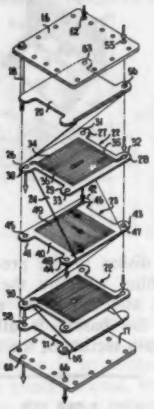
Improved TLC resolutions are obtained on plates on which the thickness of the continuous adsorbent layer is abruptly increased by a factor of about four or five to provide a narrow, deeply coated zone that increases the uptake of solvent. A spreader for readily preparing the dual thickness plates also is described.

3,585,130
FILTER FOR WATER SUPPLY
James C. Gregory, 500 W. Clarendon Ave., Phoenix, Ariz. 85013
Filed June 5, 1970, Ser. No. 43,823
Int. Cl. B01d *27/02*
U.S. Cl. 210—266 **4 Claims**



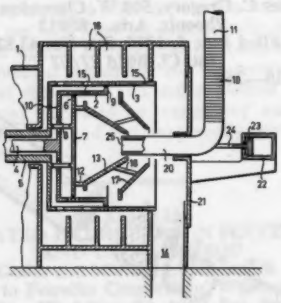
Filter and cooling system for purification of municipal and private water supplies.

3,585,131
PLEATED MEMBRANE EXCHANGE DEVICE
William G. Esmond, Baltimore, Md., assignor to Becton, Dickinson and Company, Rutherford, N.J.
Filed Apr. 24, 1969, Ser. No. 818,970
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 4 Claims



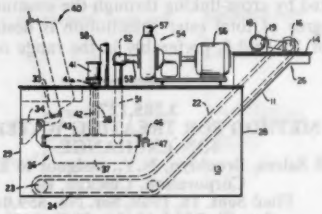
An exchange apparatus employed in desalination, ultrafiltration, in the transfer of heat, the transfer of gas from the gas phase to the liquid phase, or the transfer of gases from the gas phase to another gas phase on the opposite sides of a permeable or permselective membrane or to the transfer of waste products from blood to a suitable rinsing fluid. The exchange device is formed of a plurality of flow sheets or plates which are disposed between intermediate portions of a continuous pleated membrane. The flow plates have flow facilitating means formed therein and are reusable while the membrane is disposable.

3,585,132
PUSHER CENTRIFUGE WITH TWO OR MORE DRUMS
Ernst Rüegg, Kusnacht, Switzerland, assignor to Escher Wyss Limited, Zurich, Switzerland
Filed Oct. 17, 1969, Ser. No. 867,212
Claims priority, application Switzerland, Oct. 30, 1968, 16,160/68
Int. Cl. B04b *3/02*
U.S. Cl. 210—376 3 Claims



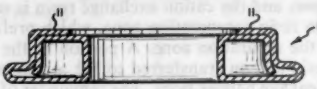
In a pusher centrifuge for material to be centrifuged, having two or more centrifuging drums through which said material being centrifuged passes successively, a member for feeding said material to be centrifuged to the inlet side of the—in the direction of the passing material—first of said drums, and for each of said drums a push member associated with the inlet side of the drum, the improvement that there is provided for at least one further of said drums another feed member supplying material to be centrifuged to the inlet side of said further drum.

3,585,133
UP-FLOW SELF-CLEANING FILTER APPARATUS
Paul R. Honan and Orien K. Norton, Lebanon, Ind., assignors to Monlan, Inc., Lebanon, Ind.
Filed Apr. 30, 1969, Ser. No. 820,484
Int. Cl. B01d *29/04*
U.S. Cl. 210—411 1 Claim



A filtering apparatus of the type having a filtered liquid receptacle nested within a raw liquid tank with the bottom of the filtered liquid receptacle formed of a filter media. The receptacle has a flexible closure or top wall which is periodically moved toward and away from the filter media to back-wash clean fluid through it to remove filtered material collecting on the filter media. The material washed off the filter media settles in the raw liquid tank.

3,585,134
FRAMED FILTER SCREEN AND METHOD OF PRODUCING SAME
Irving Schmidt, Suffern, and Jay F. Taylor, New Rochelle, N.Y., assignors to Multi-Metal Wire Cloth, Inc.
Filed Feb. 19, 1969, Ser. No. 800,382
Int. Cl. B01d *29/04*
U.S. Cl. 210—495 10 Claims



A framed filter screen comprising an endless hollow metal frame and a metal wire mesh screen attached thereto its produced by heating the frame to a temperature which renders its exterior surfaces adherent to particles of a curable epoxy resin, suspending the heated frame in a fluidized bed of such particles to adhere a layer of the particles upon the exterior surfaces of the frame, abutting an endless portion of the layer extending around the entire frame against a metal wire mesh screen while the screen is being maintained flat and taut, and heating the frame-screen assembly to cure the resin particles into a continuous coating which covers the exterior surfaces of the frame and to simultaneously cause the abutted portion of the screen to become permanently embedded in a corresponding endless portion of the cured coating.

3,585,135

FIRE INHIBITING COMPOSITION COMPRISING A CHEMICAL FIRE RETARDANT, A MAGNESIUM OXIDE, A CLAY AND AN ADHESIVE

Leonard L. Smith, 22996 Ave. 232; Robert O. Houston, 835 N. Homassel; David Sidney Longacre, 388 Bellah; and Richard Thompson, 246 E Honolulu, all of Lindsay, Calif. 93247; and Donald B. Kempfer, 1047 E. Vandalia, Porterville, Calif. 93257

No Drawing. Continuation-in-part of application Ser. No. 671,992, Oct. 2, 1967. This application Jan. 20, 1970, Ser. No. 4,425

Int. Cl. C09k *3/28*

U.S. Cl. 252—8.1 20 Claims

A fire inhibiting composition for use in aqueous solution protectively to coat a wide variety of combustible materials, being particularly adaptable for use in suppressing and preventing forest fires and the like, and containing a chemical fire retardant selected from the group consisting of diammonium phosphate, ammonium phosphate, and ammonium sulfate; a magnesium oxide; a clay; and an adhesive material including dry milk solids and a carbohydrate gum.

3,585,136

CORROSION INHIBITION OF AQUEOUS SOLUTIONS OF INORGANIC MINERAL ACIDS

James R. Stanford, Houston, Tex., assignor to Nalco Chemical Company, Chicago, Ill.

No Drawing. Filed Mar. 4, 1968, Ser. No. 709,918

Int. Cl. C11d *7/08*

U.S. Cl. 252—8.55 7 Claims

Aqueous solutions of inorganic mineral acids are inhibited against their corrosive tendencies by the addition thereto of from 0.001 to 2% by volume of a composition comprising:

(A) A Mannich reaction condensation product formed by reacting one mole of hydroabietyl amine with two moles of formaldehyde and two moles of an aldehyde containing from two to six carbon atoms and at least one hydrogen atom on the carbon atom adjacent to the aldehydic carbonyl carbon atom, and

(B) An acetylenic alcohol which contains three to twelve carbon atoms with the ratio of A:B being within the range of from 5:1 to 1:5.

3,585,137

SYNTHETIC ESTER LUBRICATING OIL COMPOSITION

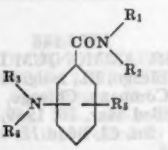
David S. Bosniack, Edison, and Stephen J. Metro, Scotch Plains, N.J., assignors to Esso Research and Engineering Company

No Drawing. Filed June 25, 1969, Ser. No. 836,613

Int. Cl. C10m *1/32, 1/36, 1/44*

U.S. Cl. 252—32.5 16 Claims

Synthetic neutral saturated carboxylic acid ester lubricating oils such as the dibasic acid esters, polybasic acid esters, diester-complex esters, and the tri and tetraesters of polyglycols with mono or dibasic acids are improved especially as to their supersonic turbine engine performance by incorporating thereinto a metal passivator which is an anthranilamide-type compound having the formula:



wherein R_1 and R_2 ar each hydrogen, C_1–C_{12} alkyl, phenyl, phenalkyl or cycloalkyl, R_3 and R_4 are each hydrogen, C_1–C_9 alkyl, C_1–C_{13} acyl or phenyl, and R_5 is hydrogen, C_1–C_9 alkyl or halo C_1–C_9 alkyl. Preferably, the nuclear amino radical is ortho to the amide group. An arylamine may be also employed, as an antioxidant, in conjunction with the anthranilamide-type compound. An arylthiazine may be used in conjunction with the antioxidant. Additionally, other additives such as phosphate esters or phosphite esters, dimer acids (dilinoleic acid) and the like are also incorporated into the ester lubricating oil for the purpose of improving its extreme pressure, antiwear and/or load carrying properties. If desired, still further additives may be incorporated for the purpose of reducing acidity or minimizing acidity increases during usage of the oil.

3,585,138

SYNTHETIC GREASE COMPOSITIONS

Raymond H. Boehringer and Robert E. Vail, Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio

No Drawing. Filed Oct. 13, 1969, Ser. No. 866,000

Int. Cl. C10m *5/14*

U.S. Cl. 252—37 6 Claims

Novel high temperature synthetic grease compositions comprise a selected ester refined with a glycidyl ester of an aliphatic acid containing from 5 to 22 carbon atoms and a metallic soap.

3,585,139

HYDROCARBON OILS CONTAINING 1-AZA BICYCLO ALKANE ADDITIVES

Jack Ryer, East Brunswick, Harold E. Deen and Bruce G. Gillespie, Cranford, and Robert R. Kuhn, Scotch Plains, N.J., assignors to Esso Research and Engineering Company

No Drawing. Continuation-in-part of application Ser. No. 642,197, May 29, 1967. This application Apr. 23, 1969, Ser. No. 818,794

Int. Cl. C01m *1/32;* C01l *1/22*

U.S. Cl. 252—50 17 Claims

Mineral and synthetic oil compositions, such as gasoline, fuels, lubricants, etc., are stabilized against sludge formation, color degradation, etc., by the addition thereto of 1-aza bicyclo alkanes having from 5 to about 9 carbon atoms in the skeletal rings with the aza nitrogen being a bridgehead nitrogen.

3,585,140

LIQUID DEVELOPER FOR USE IN ELECTROPHOTOGRAPHY CONTAINING A TERPOLYMER

Hazime Machida and Zenjiro Okuno, Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

No Drawing. Filed June 26, 1968, Ser. No. 740,024

Claims priority, application Japan, July 10, 1967, 42/44,062

Int. Cl. G03g *9/04*

U.S. Cl. 252—62.1 4 Claims

A liquid developer for use in electrophotography, comprising a toner dispersed in a carrier liquid, said carrier liquid consisting of a hydrocarbon having a high electric resistance and a low dielectric constant and a surface active agent dissolved in said hydrocarbon, said toner being prepared by having a vinyl copolymer graft-bonded onto the particles of a pigment or by coating the particles of the pigment with said vinyl copolymer, said vinyl copolymer consisting of at least three vinyl monomers of three different types selected from the following three groups, respectively, one (a) of which consisting of vinyl monomers containing functional radicals having a highly increased chemical affinity to said carrier liquid, the second group (b) consisting of vinyl monomers containing functional radicals which are capable of controlling the polarity of the pigment employed, and the last group (c) consisting of vinyl monomers containing functional radicals which are capable of producing tight adhesion or fixing of the toner to the light-sensitive layer of an electrophotographic copying material.

3,585,141

STABILIZATION OF CHROMIUM DIOXIDE BY MONOMERIC CYCLIC AMINES

Henry Gilbert Ingersoll, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 5, 1969, Ser. No. 821,997
Int. Cl. H01f *1/28*
U.S. Cl. 252—62.54 **11 Claims**

Monomeric aromatic heterocyclic tertiary amines and the alkyl, aryl, aroyl, carboxy acid, carboxy ester, or cyano derivatives thereof, said amines and derivatives characterized by a molecular weight of at least 150 or a melting point of at least 50° C., are admixed in stabilizing amounts with ferromagnetic CrO_2 particles and incorporated with a polymer binder to retard loss of residual intrinsic flux density of magnetic recording members, e.g., tapes, discs, and cylinders having a layer of the ferromagnetic CrO_2 compositions.

3,585,142

METHOD OF REMOVING COPPER-CONTAINING INCRUSTATIONS FROM FERROUS METAL SURFACES USING AN AQUEOUS ACID SOLUTION OF AMINOALKYL THIOUREA

Thaddeus M. Muzyczko, Melrose Park, William J. Ludwig, Westmont, Jon A. Loboda, Chicago, and Samuel Shore, Roselle, Ill., assignors to The Richardson Company, Melrose Park, Ill.

No Drawing. Filed Sept. 30, 1968, Ser. No. 763,957
Int. Cl. C02b *5/06;* **C07c** *157/02;* **C23g** *1/06*
U.S. Cl. 252—87 **13 Claims**

Removal of copper-containing incrustations from ferrous metal surfaces accomplished in improved manner by addition of an aminoalkyl thiourea such as 1-dimethylaminopropyl-3-allyl thiourea to an aqueous treating solution and subsequent treatment of ferrous metal surfaces wherein reduced sludge formation accompanies prevention of copper plating.

3,585,143

METHOD OF REMOVING COPPER-CONTAINING IRON OXIDE INCRUSTATIONS FROM FERROUS METAL SURFACES USING AN AQUEOUS ACID SOLUTION OF O-AMINO THIOPHENOL

Thaddeus M. Muzyczko, Melrose Park, William J. Ludwig, Westmont, Jon A. Loboda, Chicago, and Samuel Shore, Roselle, Ill., assignors to The Richardson Company, Melrose Park, Ill.

No Drawing. Filed Sept. 30, 1968, Ser. No. 763,915
Int. Cl. C02b *5/06;* **C07c** *97/10;* **C23g** *1/06*
U.S. Cl. 252—87 **13 Claims**

A method of removing copper-containing iron oxide incrustations from ferrous metal surfaces through the use of an O-amino thiophenol in solution with an acid capable of dissolving the incrustations. The use of O-amino thiophenol prevents redeposition of copper as a plating, improves the removal of iron oxides in addition to copper at lower temperatures, and improves the iron oxide removing performance of thiourea in acid solutions.

3,585,144

SCOURING PAD

Lee R. Schiltz, Harvey, and Keith L. Johnson, Matteson, Ill., assignors to Swift & Company, Chicago, Ill.

No Drawing. Filed Jan. 19, 1967, Ser. No. 610,242
Int. Cl. C11d *17/04*
U.S. Cl. 252—91 **7 Claims**

An article of manufacture comprising a scouring pad containing a cleansing composition wherein the said cleansing composition contains soap, hard-water-sensitive or soap-sensitive detergent and an alpha sulfo fatty acid or its mono- or di-salts.

3,585,145

LOW SUDSING DETERGENT COMPOSITIONS

Walter P. Fethke, Jr., Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed July 22, 1968, Ser. No. 746,274
Int. Cl. C11d *7/38, 7/56*
U.S. Cl. 252—99 **10 Claims**

Low to medium sudsing heavy duty detergent compositions containing a soap or non-soap synthetic detergent, a detergent builder and a fluoroalkyl suds suppressing agent.

3,585,146

DETERGENT SEQUESTRATION COMPOSITIONS CONTAINING STP AND NTA

Chung Yu Shen, St. Louis, Mo., and Norman Earl Stahlheber, Columbia, Ill., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Nov. 20, 1967, Ser. No. 684,471
Int. Cl. C11d *7/16, 7/32, 11/00*
U.S. Cl. 252—137 **1 Claim**

A sequestration composition having a molar ratio of alkali metal nitrilotriacetate to alkali metal tripolyphosphate of from about 1:13 to about 2.2:1 and having a bulk density below about 0.6 gram per cc. and being substantially free of a string base; said salts being at least about 95% by weight of the total composition on an anhydrous basis and the process for producing sequestration compositions containing said salts utilizing alkali metal trimetaphosphate as one of the raw materials. The process comprises (a) preparing a mixture consisting essentially of at least about 13% by weight of water, from about 5% to 60% by weight of alkali metal nitrilotriacetate and an amount of alkali metal base; the molar ratio of said base to said triacetate being from about 1.1:1 to about 26:1; (b) adding to said mixture an amount of alkali metal trimetaphosphate sufficient to at least react with the base and a portion of the water and (c) drying the resulting composition to produce a detergent product which is substantially free of said base and which contains alkali metal nitrilotriacetate and alkali metal tripolyphosphate in the foregoing molar ratios.

3,585,147

STABILIZED CHLORINE DIOXIDE SOLUTIONS CONTAINING A CHLORIDE AND PROCESSES OF MAKING AND USING SAME

Gilbert Gordon, Iowa City, Iowa, assignor to International Dioxcide, Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 711,024, Mar. 6, 1968. This application Oct. 1, 1969, Ser. No. 862,743
Int. Cl. C01b *11/02*
U.S. Cl. 252—187 **12 Claims**

Addition of a chloride of an alkali or alkaline earth metal increases the yield and rate of release of chlorine dioxide from solutions of alkali metal chlorite or stabilized chlorine dioxide.

3,585,148

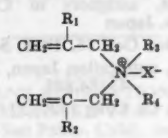
QUATERNARY AMMONIUM DEMULSIFIERS

John J. Sackis, Chicago, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

No Drawing. Filed Mar. 26, 1969, Ser. No. 810,812
Int. Cl. B01d *17/04*
U.S. Cl. 252—344 **6 Claims**

A method of demulsifying a dispersed oil in a non-oily continuous phase which comprises treating the emulsion with an effective amount of at least 10 p.p.m. (preferred 100–1000 p.p.m.) of a water soluble cationic copolymer having a M.W. of at least 2,000 and obtained by copoly-

merization of acrylamide and a bis-ethylenically unsaturated compound represented by



R_1 and R_2 each represent a member of a group consisting of hydrogen and methyl.

R_3 and R_4 each represent a member of a group consisting of loweralkyl, hydroxy loweralkyl, and $-(AlkO)_nH$ where n=2–5 and Alk=a member of a group selected from ethylene, propylene, and butylene.

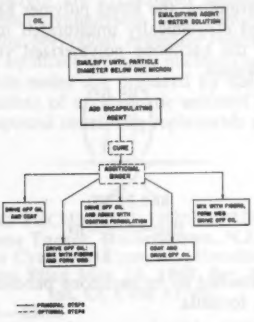
X^- represents a water soluble anion.

3,585,149

MICROCAPSULAR OPACIFIER SYSTEM

Anthony E. Vassiliades, Deerfield, Edward F. Nauman, Lake Forest, and Shrenik Shroff, Chicago, Ill., assignors to U.S. Plywood-Champion Papers Inc., New York, N.Y.

Filed Dec. 23, 1968, Ser. No. 786,337
Int. Cl. B01j *13/02*; C09d *5/00*; B44d *1/02*
U.S. Cl. 252—316 23 Claims



Opacifiers comprising air-containing microcapsules having an average particle diameter of below about one micron provide highly opaque surfaces when coated onto and/or incorporated into fibrous and non-fibrous substrates. The opacifiers are produced by heating liquid-containing precursor microcapsules at temperatures sufficient to expel the liquid and provide air in the microcapsule.

3,585,150

FOAM INHIBITED CO_2 REGENERATIVE AMINE ABSORBENT COMPOSITIONS

Paul R. Gustafson, Washington, D.C., and Roman R. Miller, Silver Spring, Md., assignors to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Nov. 20, 1967, Ser. No. 684,469
Int. Cl. B01d
U.S. Cl. 252—321 4 Claims

The effective foam control life of silicone anti-foam compositions is extended by including aminoalkanesulfonic acids and their salts. Even greater anti-foam protection is provided by further adding a glycine compound or salt to the composition. Addition of the novel compositions of this invention to monoethanolamine scrubber solutions appreciably increases the effective life of such solutions over that possible using a silicone anti-foam agent alone.

3,585,151

CORROSION INHIBITED PHOSPHORIC ACID COMPOSITION

Olen L. Riggs, Jr., Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Feb. 9, 1968, Ser. No. 704,221
Int. Cl. C23f *11/00*
U.S. Cl. 252—390 4 Claims

A corrosion inhibited phosphoric acid composition comprising a phosphoric acid solution having added thereto an effective amount of the reaction product of hydrogen iodide and an organic amine having a molecular weight between about 50 and about 500.

3,585,152

CATALYST FOR PREPARING UNSATURATED ACIDS AND ALDEHYDES

Jamal S. Eden, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Original application Feb. 28, 1967, Ser. No. 619,190, now Patent No. 3,520,923, dated July 21, 1970. Divided and this application Aug. 29, 1969, Ser. No. 870,778
Int. Cl. B01j *11/82*
U.S. Cl. 252—437 2 Claims

A catalyst containing molybdenum oxide, tellurium oxide and thorium phosphate is disclosed for the simultaneous preparation of unsaturated aldehydes and unsaturated acids by reacting a monoolefin with oxygen.

3,585,153

REFRACTORY FELT

Jean-Pierre Kiehl, Saint-Charles, Lyon, and Gabriel Pupier, Villon, Lyon, France, assignors to Societe Generale des Produits Refractaires, Paris, France

No Drawing. Filed Mar. 4, 1969, Ser. No. 804,268
Claims priority, application France, Mar. 20, 1968, 144,519
Int. Cl. B01j *11/40*
U.S. Cl. 252—455R 10 Claims

A refractory felt and method of making same comprising preparing a web of substantially insoluble refractory mineral fibers having a large specific surface and treating the web by continuously rolling at elevated temperatures such that the fibers sinter together where they contact.

3,585,154

PROCESS FOR PRODUCING ACETIC ACID BY CATALYTIC OXIDATION OF PROPYLENE AND A CATALYST THEREFOR

R. Parthasarathy, Tacoma Park, Md., and Robert M. Dobres, deceased, late of Silver Spring, Md., by Amalie B. Dobres, executrix, Silver Spring, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Original application Oct. 26, 1966, Ser. No. 590,157, now Patent No. 3,536,755. Divided and this application Apr. 16, 1969, Ser. No. 871,203
Int. Cl. B01d *11/32, 11/42*
U.S. Cl. 252—457 5 Claims

Propylene is converted to acetic acid by oxidation in the presence of a catalyst comprising zinc, cobalt, and molybdenum oxides.

3,585,155

FLY ASH-ASPHALT MIXTURES

Elmer J. Hollstein, Wilmington, Del., assignor to Sun Oil Company, Philadelphia, Pa.

No Drawing. Filed Jan. 25, 1968, Ser. No. 700,363
Int. Cl. C08f 47/08, 41/12
U.S. Cl. 260—2.5 2 Claims

Novel cured products of asphalt and fly ash are produced by compression and heat-curing of mixtures of asphalt and fly ash.

3,585,156

CATALYST MODIFIERS FOR DIHYDROPYRANYL FOAMABLE COMPOSITIONS

Norman Dennis Hall, Cornwall, Ontario, Canada, assignor to Canadian Industries Limited, Montreal, Quebec, Canada

No Drawing. Filed Jan. 27, 1969, Ser. No. 794,362
Claims priority, application Great Britain, Feb. 12, 1968, 6,819/68
Int. Cl. C08c 17/08
U.S. Cl. 260—2.5R 8 Claims

Specific amine catalyst modifiers for controlling the polymerization of acid catalyzed foamable compositions containing dihydropyranyl compounds. The catalyst modifiers slow down the polymerization reaction and provide well cured foamed cellular polymeric materials.

3,585,157

MULTIPHASED SYNTHETIC FOAMS

Warren R. Beck, Mahtomedi, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed July 18, 1967, Ser. No. 654,100
Int. Cl. C08g 22/44
U.S. Cl. 260—2.5 8 Claims

Strong lightweight synthetic foam containing a mixture of macrocells such as polystyrene bubbles and microcells such as glass microbubbles, the addition of the microcells providing enhanced foams as compared to those prepared from only the macrocells, the cells being homogeneously distributed through an organic polymer, for example a thermosetting polymer such as an epoxy, polyurethane, or polyester, the mixture providing an optimized combination of very low density and high strength.

3,585,158

PROCESS FOR THE PRODUCTION OF FOAM RUBBER

Pieter Luijk, Pieter H. M. Höller, and Jacobus M. Rellage, Delft, Netherlands, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Continuation of application Ser. No. 559,705, June 23, 1966. This application July 14, 1969, Ser. No. 847,495
Claims priority, application Netherlands, July 1, 1965, 6508504
Int. Cl. C08f 47/10; C08j 1/26
U.S. Cl. 260—2.5 6 Claims

This invention relates to the extrusion of a composition containing rubber, vulcanizing components and a vaporizable substantially inert organic liquid, the improvement comprising attaining maximum expansion of the cellular structure substantially at the end of the scorch period.

3,585,159

COORDINATE-BONDING, CORROSION-PREVENTIVE PAINT

Kazuyuki Mihara, Kunio Kobiyama, and Yukio Yoshida, Tokyo-to, Japan, assignors to Cashew Kabushiki Kaisha, Tokyo-to, Japan

No Drawing. Filed Oct. 25, 1968, Ser. No. 770,829
Claims priority, application Japan, Dec. 29, 1967, 43/84,845
Int. Cl. C08g 5/20, 51/72
U.S. Cl. 260—19 15 Claims

A compound of the urushi lacquer class and at least one compound selected from aromatic acids and hydroxy acids and polyvalent phenols are caused to undergo copolycondensation together with Formalin in the presence of an acidic catalyst, and, with the resulting resinous substance, an animal or vegetable drying oil, at least one pigment, and other additives as desired are thoroughly admixed to produce a paint of high corrosion-preventive performance due to its coordinate-bonding characteristic.

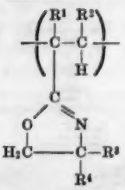
3,585,160

POLYMER HAVING PENDENT AMINO ACRYLATE GROUPS AND PENDENT OXAZOLINE ESTER GROUPS USEFUL FOR FORMING COATING COMPOSITIONS

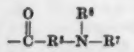
Lester I. Miller and Aloysius N. Walus, Flint, Mich., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Apr. 21, 1969, Ser. No. 818,073
Int. Cl. C08f 21/04, 33/00
U.S. Cl. 260—22 15 Claims

A novel polymer useful for forming coating compositions and a process for making this polymer are the subjects of this invention; the novel polymer has a backbone of polymerized ethylenically unsaturated monomers and containing in the backbone polymerized vinyl oxazoline ester of the formula



and having attached to its backbone pendent amino ester groups of the formula



wherein R^1, R^2, R^3, R^4, R^5, R^6 and R^7 are hydrocarbon groups; this novel polymer is particularly useful in forming high quality coating compositions that air dry into tough, durable films.

3,585,161

PROCESS FOR PREPARING FILMS OF POLY-γ-METHYL GLUTAMATE MODIFIED WITH URETHANE PREPOLYMER HAVING TERMINAL ISOCYANATE GROUPS

Akira Akamatsu, Kazushi Togo, Yasuo Takagi, and Ryonosuke Yoshida, Kanagawa-ken, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

No Drawing. Filed Sept. 17, 1969, Ser. No. 858,884
Claims priority, application Japan, Sept. 30, 1968, 43/71,016
Int. Cl. C08g 51/30, 41/04
U.S. Cl. 260—33.8UR 4 Claims

A solution of poly-γ-methyl glutamate in a chlorinated aliphatic hydrocarbon when modified by the addition of

a urethane prepolymer of a molecular weight of 700 to 5,000 having two terminal isocyanate groups forms a dope from which films and coatings of mechanical properties desirable in artificial leather may be prepared.

3,585,162
POLYURETHANE RECREATIONAL SURFACES HAVING IMPROVED TEAR STRENGTH
George G. Sapp, San Pablo, Calif., assignor to Chevron Research Company, San Francisco, Calif.
No Drawing. Continuation-in-part of abandoned application Ser. No. 812,333, Apr. 1, 1969. This application Jan. 7, 1970, Ser. No. 1,312
Int. Cl. C08k *1/06, 1/12, 1/16*
U.S. Cl. 260—37 3 Claims

Resilient paving materials comprising cross linked, organic-polyol based polyurethanes containing inert fillers and as a tear strength improver a minor portion of attapulgite.

3,585,163
CROSSLINKED AROMATIC POLYMERS HAVING DIRECT AROMATIC NUCLEI TO AROMATIC NUCLEI LINKAGES
Alan Jeffrey Neale and Terence James Rawlings, Llangollen, Wales, Ireland, assignors to Monsanto Chemicals Limited, London, England
No Drawing. Continuation-in-part of application Ser. No. 433,474, Feb. 17, 1965. This application July 9, 1968, Ser. No. 743,328
Claims priority, application Great Britain, July 10, 1967, 31,589/67, Patent 1,178,596
Int. Cl. C08g *15/00, 23/00*
U.S. Cl. 260—47 22 Claims

Disclosed herein are crosslinked insoluble, infusible, thermally stable polyphenylene resins comprising a plurality of recurring polyvalent aromatic radicals, which are characterized by direct aromatic nuclei to aromatic nuclei linkages, which resins are prepared by the thermal condensation reaction of an aromatic sulfonyl halide and an aromatic compound containing replaceable nuclear hydrogen atoms.

3,585,164
CASTING TECHNIQUE USING PURGE GAS
Robert Jerome Tucker, Hackettstown, N.J., assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Mar. 18, 1969, Ser. No. 808,329
Int. Cl. C08f *45/60*
U.S. Cl. 260—45.75 4 Claims

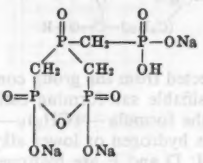
A defined class of tetraaryl arylaminium salt infrared absorbers are successfully incorporated into polymethylmethacrylate by an improved casting technique in which the polymer syrup containing the infrared absorber is purged with an inert gas to remove dissolved oxygen therefrom and then degassed prior to being poured into the heat-curing cell.

3,585,165
POLYOXYMETHYLENE COPOLYMERS STABILIZED WITH 3,5-DIAMINO-1,2,4-TRIAZOLE
Dieter Gerlach, Grossauheim, and Erich Bader, Hanau am Main, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany
No Drawing. Filed Jan. 23, 1969, Ser. No. 793,555
Claims priority, application Germany, Jan. 27, 1968, D 55,204
Int. Cl. C08g *51/60*
U.S. Cl. 260—45.8 10 Claims

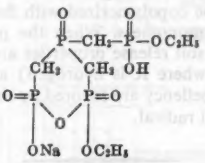
Polyoxymethylene copolymers containing alkyleneoxy groups having at least two adjacent carbon atoms in the main chain have their properties improved, particularly at high temperatures, by admixing with 3,5-diamino-1,2,4-triazole. For use in air conventional antioxidants, preferably phenols are also included in the composition.

3,585,166
ORGANIC COMPOSITIONS CONTAINING ESTERS, SALTS AND ACIDS OF PARTIAL ANHYDRIDES OF PHOSPHINE OXIDES
Al F. Kerst, Denver, Colo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed June 11, 1969, Ser. No. 832,419
Int. Cl. C07d *105/02;* C09k *3/28*
U.S. Cl. 260—45.8 12 Claims

This invention relates to organic compositions containing, for example, polyurethane and a partial anhydride of alkylidene phosphonyl phosphine oxide such as trisodium tri(methyl phosphonyl) phosphine oxide monoanhydride having the formula:



or the diethyl ester thereof and which has the formula



3,585,167
POLYISOCYANATE COATING COMPOSITIONS
Herbert Naarmann, Ludwigshafen, Heinrich Hartmann, Limburgerhof, Matthias Marx, Bad Durkheim, and Kurt Schneider, Limburgerhof, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed Dec. 9, 1968, Ser. No. 782,455
Claims priority, application Germany, Dec. 8, 1967, P 16 21 823.8
Int. Cl. C08g *22/04, 22/16*
U.S. Cl. 260—77.5 7 Claims

Coatings prepared by reaction of polyisocyanates with copolymers containing hydroxyl groups and polymerized units of unsaturated thioglycol ethers.

3,585,168
PROCESS FOR PRODUCING COPOLYMER OF EPOXIDE AND CARBON DIOXIDE
Shohei Inoue, 7–1, 3-chome, Hakusan, Bunkyo-ku; Hideomi Koinuma, 383 Seta-machi, Tamagawa, Setagaya-ku; and Teiji Tsuruta, 36F–203, 4-chome, Kamiyoga, Setagaya-ku, all of Tokyo, Japan
Filed Aug. 15, 1969, Ser. No. 850,472
Claims priority, application Japan, Sept. 21, 1968, 43/67,962
Int. Cl. C08g *17/13*
U.S. Cl. 260—77.5D 4 Claims

A process for producing high molecular weight copolymers of an epoxide, such as propylene oxide, ethylene oxide, styrene oxide, isobutylene oxide or epichlorohydrin, and carbon dioxide, wherein the copolymerization re-

action occurs under the pressure of carbon dioxide gas and in the presence of an organometallic compound as a catalyst.

3,585,169

FLUOROCARBON ESTERS AND POLYMERS

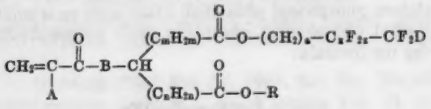
Elemer Domba, Olympia Fields, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 675,352, Oct. 16, 1967. This application Dec. 13, 1968, Ser. No. 783,754

Int. Cl. C08f *3/50, 15/16*

U.S. Cl. 260—78 41 Claims

Water- and oil-repellent homopolymers and copolymers are prepared from an acrylyl monomer of the general formula:



wherein R is selected from the group consisting of hydrogen, water-emulsifiable salt-forming cations, and fluoroalkylradicals of the formula $-(CH_2)_b-(C_yF_{2y})-CF_2E$; and wherein A is hydrogen or lower alkyl (C_1 to C_5); B is oxygen or NH; D and E are hydrogen or fluorine; *m* and *n* are integers from 0 to 4 inclusive, and totalling no more than 4; *x* and *y* are integers from 1 to 18 inclusive; and *a* and *b* are integers from 1–3 inclusive. The monomer may be copolymerized with fluorine-containing or fluorine-free monomers. When the polymers are applied to fabrics, soil release properties are favored by the half ester (i.e., where R is hydrogen) and its salts, and oil and water repellency are favored by the diesters, where R is a fluoroalkyl radical.

3,585,170

POLYMERS

Harold George Burrows and Stephen John Hepworth, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Feb. 5, 1968, Ser. No. 702,816

Claims priority, application Great Britain, Feb. 7, 1967, 5,843/67

Int. Cl. C08g *20/00*

U.S. Cl. 260—78 8 Claims

Polyamides having high affinity for Acid Dyestuffs which polyamides are prepared by carrying out the polymerisation of the polyamide-forming components in the presence of an organic diamine salt of a phosphonic acid and a N-alkyl arylsulphonamide.

3,585,171

ACCELERATING THE ANIONIC POLYMERIZATION OF LACTAMS

Adolf Steinhofer, Manfred Patsch, Helmut Doerfel, and Georg Falkenstein, Ludwigshafen (Rhine), and Wolfgang-Dieter Jeserich, Lambsheim, Pfalz, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed June 27, 1968, Ser. No. 740,468

Claims priority, application Germany, July 5, 1967, P 17 20 281.2

Int. Cl. C08g *20/18*

U.S. Cl. 260—78 5 Claims

A process for accelerating polymerization of lactams carried out in the presence of alkaline catalysts at temperatures of from 80° to 200° C. using lactam-N-carboxylic acid carbazolamides as activators.

3,585,172

RESIN COMPOSITION FOR ELECTROCOATING PAINT AND METHOD OF PREPARING THE SAME

Chyuzou Nishiyama and Nobutoshi Yamada, Kusatsu-shi, Japan, assignors to Ishihara Sangyo Kaisha, Ltd., Osaka, Japan

No Drawing. Filed Oct. 14, 1969, Ser. No. 866,395

Claims priority, application Japan, Oct. 14, 1968, 43/74,191

Int. Cl. C08f *27/08*

U.S. Cl. 260—78.5 13 Claims

A resin composition useful for preparing electrocoating paints containing a film forming resin with free carboxyl groups and specific amide groups in the molecule thereof.

This resin composition is prepared by amidating a part of the free carboxyl groups of an acid polymer containing α,β-olefinically unsaturated carboxylic acids as polymerized units by the reaction of said acid polymer and a hydroxyalkylamine.

3,585,173

OLEFIN COPOLYMERS AND PROCESS FOR PREPARING SAME

Giulio Natta, Giorgio Mazzanti, Alberto Valvassori, Guido Sartori, and Nazzareno Cameli, Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Continuation-in-part of application Ser. No. 303,174, Aug. 16, 1963. This application Nov. 10, 1965, Ser. No. 507,231

Claims priority, application Italy, Aug. 17, 1962, 678,563/62

Int. Cl. C08f *15/40*

U.S. Cl. 260—79.5 19 Claims

There are disclosed high-molecular weight copolymers and more particularly substantially linear, amorphous copolymers of a methyl-substituted tetrahydroindene and at least one monomer selected from the group consisting of ethylene and higher alpha-olefins of the general formula $R—CH=CH_2$ in which R is an alkyl group containing from 1 to 6 carbon atoms, which are capable of being vulcanized. There is also disclosed a process for preparing the linear, amorphous, high molecular weight copolymers capable of being vulcanized. The process comprises the use of catalysts acting with a coordinated anionic mechanism.

3,585,174

OLEFIN COPOLYMERS AND PROCESS FOR PREPARING SAME

Giulio Natta, Giorgio Mazzanti, Alberto Valvassori, Guido Sartori, and Nazareno Cameli, Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Filed Aug. 16, 1963, Ser. No. 303,174

Claims priority, application Italy, Aug. 17, 1962, 16,495/62

Int. Cl. C08f *5/00*

U.S. Cl. 260—80.78 39 Claims

There are disclosed high-molecular weight copolymers of at least one polycyclic polyene having condensed nuclei and in which each pair of condensed nuclei has two carbon atoms in common, and at least one monomer selected from the group consisting of ethylene and higher alpha-olefins of the general formula $R—CH_2=CH_2$, wherein R is an alkyl group containing 1 to 6 carbon atoms, and more particularly such substantially linear-amorphous copolymers which are capable of being vulcanized. Also disclosed is a process for preparing the linear amorphous high-molecular weight copolymers capable of being vulcanized. The process comprises the use of catalysts acting with a coordinate anionic mechanism.

3,585,175

PROCESS FOR EMULSION POLYMERIZATION OF A MONO-OLEFIN, A VINYL ESTER AND CROTONIC ACID

Albert E. Corey, East Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Aug. 27, 1968, Ser. No. 755,714
Int. Cl. C08f *15/40*
U.S. Cl. 260—80.8 7 Claims

Disclosed herein is an improvement in a process for the emulsion interpolymerization at pressures of less than about 1500 p.s.i. of at least one monoolefin that exists in the gaseous state at 20° C. and one atmosphere pressure and at least one interpolymerizable vinyl ester containing 3–6 carbon atoms, wherein the mole fraction of vinyl ester in the final resin exceeds the mole fraction of monoolefin, wherein the improvement comprises interpolymerizing therewith at least about 0.1 percent by weight, based upon the weight of the polymer, of crotonic acid. An interpolymer of mono-olefin, vinyl ester and crotonic acid is also disclosed.

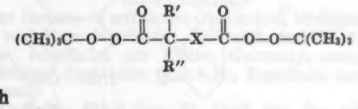
3,585,176

PROCESS FOR THE PEROXIDIC HOMOPOLYMERIZATION OR COPOLYMERIZATION OF VINYL MONOMERS

Hans G. Gerritsen, Deventer, and Hans Jaspers, Diepenveen, Netherlands, assignors to Koninklijke Industrieele Maatschappij Noury & Van Der Lande N.V., Brink, Deventer, Netherlands

No Drawing. Filed Aug. 19, 1968, Ser. No. 753,778
Claims priority, application Netherlands, Aug. 29, 1967, 6711825
Int. Cl. C08f *3/68, 7/04, 15/22*
U.S. Cl. 260—85.5 7 Claims

At least one vinyl monomer is subjected to peroxidic homopolymerization or copolymerization, in two heating steps, with the aid of a bifunctional diperester having the general formula:



in which

R'=H, CH_3— or C_2H_5—;
R''=CH_3— or C_2H_5—; and
X=—CH_2— or —A—CH_2—, in which —A— represents a branched or unbranched alkylene group containing 1–7 C-atoms.

Preferable bifunctional peresters for the purpose are:

di-tertiary butylperoxy-alpha-methyl-succinate,
di-tertiary butylperoxy-alpha-methyl glutarate,
di-tertiary butylperoxy alpha, gamma-dimethyl adipate,
di-tertiary butylperoxy-trimethyl adipate, and
di-tertiary butylperoxy-alpha, gamma, gamma-trimethyl adipate.

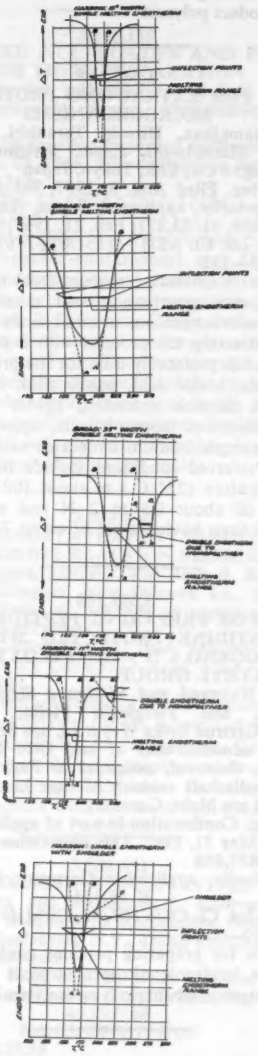
3,585,177

NOVEL POLY(OLEFIN/VINYL ALCOHOL) PACKAGING MATERIALS

Donald M. Gardner, Springfield, Joseph G. Martins, Ludlow, and Leo J. Monaghan, Springfield, Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 30, 1966, Ser. No. 598,030
Int. Cl. C08f *15/02, 27/14*
U.S. Cl. 260—87.3 8 Claims

Olefin/vinyl alcohol copolymers are prepared by a special process to give copolymers that have a narrow olefin distribution and which are substantially free of homopolymer segments. These novel copolymers are then formed into packaging materials which are characterized



by having good thermal processing characteristics and low permeability to oxygen and water vapor.

3,585,178

PROCESS FOR THE PREPARATION OF CIS-1,4-ISOPRENE POLYMER

Kohei Kasai, Yokohama-shi, and Toshio Namizuka, Tokyo, Japan, assignors to The Japanese Geon Company, Ltd., Tokyo, Japan

No Drawing. Filed Nov. 5, 1969, Ser. No. 874,364
Claims priority, application Japan, Nov. 13, 1968, 43/82,561
Int. Cl. C08d *3/10*
U.S. Cl. 260—94.3 7 Claims

A process for the preparation of isoprene polymers of high cis-1,4-linkage content by polymerizing isoprene in

an inert hydrocarbon solvent, in the presence of a catalyst composed essentially of organoaluminum compound and titanium tetrahalide, characterized in that at least a part of said hydrocarbon solvent is replaced by vinyl halide, whereby achieving effective control of the molecular weight of product polymer.

3,585,179

PROCESS FOR EXTRACTING PROTEINS FROM MICROORGANISMS

Hirotoshi Samejima, Hiroshi Teranishi, and Takashi Deguchi, Machida-shi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

No Drawing. Filed Aug. 3, 1967, Ser. No. 658,049
Claims priority, application Japan, Aug. 5, 1966, 41/51,089, 41/53,277; Feb. 21, 1967, 42/10,667
Int. Cl. A23j *1/18;* **C07g** *7/028*
U.S. Cl. 260—112 **18 Claims**

A process for extracting proteins from microorganisms which comprises pre-treating said microorganisms by heating the microorganisms in an aqueous acidic solution and then extracting the proteins with a suitable extracting agent. Acids preferably used for the pre-treatment are mineral acids, acetic acid, oxalic acid, citric acid and formic acid. Suitable extracting agents include water, aqueous solutions of inorganic salts, aqueous alkali solutions, for example, sodium hydroxide and aqueous urea solutions. Preferred conditions include heating at from room temperature (25° C.) to about 100° C., acid concentrations of about 0.5 to 2 N and extraction with aqueous solutions having a pH of about 7.

3,585,180

PROCESS FOR PREPARING PEPTIDES CONTAINING HISTIDINE PROTECTED WITH A 2,2,2,-TRIHALOGENO - N - BENZYLOXYCARBONYL-AMINOETHYL GROUP

Friedrich Weygand and Wolfgang Steglich, Munich, Germany, and Piergiogio Pietta, Milan, Italy; Johanna Gertrud Erika Weygand, nee Schneider, executrix and administratrix of said Otto Friedrich Peter Weygand, deceased, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Continuation-in-part of application Ser. No. 642,302, May 31, 1967. This application June 30, 1969, Ser. No. 837,898
Claims priority, application Germany, June 1, 1966, F 49,354
Int. Cl. C07c *103/52;* **C07d** *49/36*
U.S. Cl. 260—112.5 **2 Claims**

A process for preparing peptides containing histidine wherein the imidazole nitrogen atom is protected by a 2,2,2-trihalogeno-N-benzyloxycarbonylaminoethyl group.

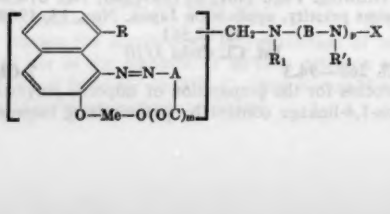
3,585,181

METAL CONTAINING MONOAZO REACTIVE DYESTUFFS

Horst Jager, Cologne-Muelheim, Karl-Heinz Schundehutte, Opladen, and Heinz Machatzke, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation of application Ser. No. 538,547, Mar. 30, 1966. This application Aug. 7, 1969, Ser. No. 849,600
Int. Cl. C09b *62/00;* **D06p** *1/02*
U.S. Cl. 260—146 **7 Claims**

Fiber reactive dyestuffs of the formula



in which

R is hydroxyl or acylamino;

A is an aromatic-heterocyclic or aromatic-carboxylic radical in which the group $—(CO)_mO—$ is in the adjacent position to the azo grouping;

m is 0 or 1;

Me is a complex-bound metal;

R_1 and R'_1 are hydrogen or alkyl;

B is a bridge member;

p is 0 or 1; and

x is a fiber reactive group.

The dyestuffs are prepared by reacting the corresponding amino azo dyestuffs (containing no X substituent) with a compound Hal—X in which Hal is halogen and X is a fiber reactive moiety.

3,585,182

QUATERNIZED TRIAZOLIUMAZO - 4 - PHENYL-THIOMORPHOLINO-1,1-DIOXIDE DYESTUFFS

James M. Straley and John G. Fisher, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Feb. 28, 1968, Ser. No. 708,754
Int. Cl. C09b *29/36, 62/82;* **D06p** *1/02*
U.S. Cl. 260—157 **4 Claims**

Triazolium-azo compounds produce yellow to red dyeings, having excellent fastness to light, on acrylic, modacrylic and acid-modified textile materials and have a quaternized triazolyl diazo component and a 4-phenyl-thiomorpholino-1,1-dioxide coupling component.

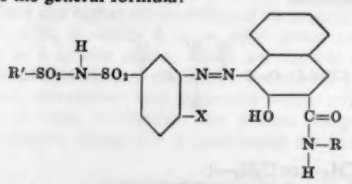
3,585,183

PHENYL-AZO-NAPHTHOL DYES CONTAINING A DISULFIMIDE GROUP

Roderick H. Horning, Reading, Pa., assignor to Crompton & Knowles Corporation, Worcester, Mass.

No Drawing. Filed June 14, 1968, Ser. No. 736,983
Int. Cl. C07c *107/04;* **C09b** *29/20*
U.S. Cl. 260—203 **6 Claims**

A phenyl-azo-naphthol dyestuff containing a disulfimide group of the general formula:



wherein R is an unsubstituted phenyl or naphthyl group or a substituted phenyl group that is free of ionogenic substituents and that has a total molecular weight of not more than 175, X is —H, —Cl, $—CH_3$, and R′ is an unsubstituted phenyl, naphthyl or biphenyl group or a substituted phenyl group that is free of ionogenic substituents and that has a total molecular weight of not more than 150, with the proviso that when X is —Cl then R is a group as defined other than an unsubstituted phenyl group, which is soluble in water and dyes synthetic and natural polyamide fibers such as nylon, silk and wool in red shades with little sensitivity to the presence of metal ions in the dye bath.

3,585,184

2-AMINO - 2 - DEOXY-D-GLUCOPYRANO-D-GLUCOPYRANANS HAVING THE ALPHA-D-GLUCOSE CONFIGURATION, METHOD, AND USE

Melville L. Wolfrom and Paul Y. Wang, Columbus, Ohio, assignors to The Ohio State University, Columbus, Ohio

No Drawing. Filed Dec. 29, 1967, Ser. No. 694,382
Int. Cl. C07g *3/00*
U.S. Cl. 260—209 **21 Claims**

2-amino-2-deoxy - D - glucopyrano-D-glucopyranans (briefly, 2-amino-2-deoxy-amyloses) having the alpha-D-

glucose configuration and method of producing same from amylose with retention of configuration, intermediates therefor, and use thereof. An especially valuble utility is in the synthesis of heparin.

3,585,185
ESTER-CONTAINING POLYOLS
William W. Levis, Jr., Wyandotte, and Louis C. Pizzini, Trenton, Mich., assignors to Wyandotte Chemicals Corporation, Wyandotte, Mich.
No Drawing. Filed May 13, 1968, Ser. No. 728,814
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 **5 Claims**

Ester-containing polyols are prepared by the reaction of alkylene oxide condensates of organic compounds having at least two active hydrogen atoms with halogen-containing organic acid anhydrides and alkylene oxides. The polyols are particularly useful in the preparation of flame-retardant polyurethane foams.

3,585,186
PREPARATION OF GLYCOPYRANOSIDURONIDES AND GLYCOPYRANOSIDES AND PRODUCTS RESULTING THEREFROM
Ransom Brown Conrow, Pearl River, and Seymour Bernstein, New City, N.Y., assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Jan. 31, 1969, Ser. No. 795,699
Int. Cl. C07c *173/00*
U.S. Cl. 260—210.5 **10 Claims**

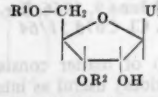
An improved method of preparing steroid glycopyranosiduronides and glycopyranosides is described. These compounds are prepared by reacting a glycosidyl or glycuronyl halide with an aromatic hydroxy steroid in the presence of a cadmium compound and a hydrocarbon solvent. The products are useful as estrogenic agents.

3,585,187
NOVEL DERIVATIVES OF BUFADIENOLIDE-GLYCOSIDES
Joachim Heider, Warthausen-Oberhofen, Wolfgang Eberlein and Hans Machleidt, Biberach, and Franz Pattermann, Ingelheim am Rhein, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany
No Drawing. Filed Dec. 28, 1967, Ser. No. 694,083
Claims priority, application Germany, Dec. 30, 1966, T 32,902; June 13, 1967, T 34,084
Int. Cl. C07c *173/00*
U.S. Cl. 260—210.5 **5 Claims**

The compounds are derivatives of 3-(2',3'-O-alkylidene)-α-L-rhamnosido-14β-hydroxy - bufa - 4,20,22-trienolides, useful cardiac-active agents with a positive inotropic action upon heart auricle in warm-blooded animals.

3,585,188
PROCESS FOR PRODUCING 2'-DEOXYURIDINE
Ryuji Marumoto, Minoo, and Mikio Honjo, Takatsuki, Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
No Drawing. Filed June 16, 1969, Ser. No. 833,780
Int. Cl. C07c *51/52*
U.S. Cl. 260—211.5R **6 Claims**

A process is provided for producing 2'-deoxyuridine. In accordance with the process a lower alkanoyl bromide of at most 7 carbon atoms is reacted with a uridine compound of the formula



wherein each of R^1 and R^2 is H or a lower alkanoyl group. The resulting 3',5'-di-O-(lower alkanoyl)-2'-bromo-2'-deoxyuridine is subjected to reduction and subsequent hydrolysis to obtain 2'-deoxyuridine. Also provided is the compound 3',5'-di-O-propionyl-2'-bromo-2'-deoxyuridine, useful as an intermediate in such process.

3,585,189
UNSATURATED NUCLEOSIDES AND PROCESSES FOR THEIR PREPARATION
Julien P. Verheyden and John G. Moffatt, Los Altos, Calif., assignors to Syntex Corporation, Panama, Panama
No Drawing. Continuation-in-part of application Ser. No. 585,307, Oct. 10, 1966. This application June 27, 1969, Ser. No. 837,368
Int. Cl. C07d *51/52, 51/54*
U.S. Cl. 260—211.5 **8 Claims**

5' - deoxy-β-D-erythro-pent-4'-enofuranosyl, 2',5'-dideoxy-β-D-glycero-pent-4'-enofuranosyl and 6'-deoxy-β-D-erythro-hex-5'-enofuran-2-ulosyl nucleosides are prepared by dehydrohalogenating the corresponding 5'-deoxy-5'-iodoribofuranosyl, 2',5'-dideoxy-5'-iodoribofuranosyl and 6'-deoxy-6'-iodopsicofuranosyl nucleosides with 1,5-diazobicyclo-[4-3-O]-non-5-ene. These unsaturated nucleosides are useful in producing metabolic deficiencies in biological systems. The iodo starting compounds in the purine series are prepared by reacting the corresponding 5' and 6'-hydroxy compounds with alkyltriaryloxyphosphonium iodide or aralkyltriaryloxyphosphonium iodide.

3,585,190
DIETHYLAMINOETHYLATED CELLULOSE-ACID ANHYDRIDE REACTION PRODUCTS
Donald M. Soignet, Metairie, and Ruth R. Benerito and Mary W. Pilkington, New Orleans, La., assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Filed Oct. 31, 1968, Ser. No. 772,427
Int. Cl. C08b *3/12, 3/20, 3/22*
U.S. Cl. 260—226 **3 Claims**

The tertiary amine groups of diethylaminoethyl cotton act as an internal catalyst for the reaction of cellulose hydroxyls with anhydrides to form esters. The cellulose esters are stable to mild acid steeping and unstable under mild basic conditions. Anhydrides containing halogen atoms yield products with increased resistance to rot.

3,585,191
ANDROSTANE DERIVATIVES
Arthur F. Marx and Hermanus J. Kooreman, Delft, Netherlands, assignors to Koninklijke Nederlandsche Gist-En Spiritusfabriek N.V., Delft, Province of South Holland, Netherlands
No Drawing. Filed Sept. 9, 1969, Ser. No. 856,467
Claims priority, application Great Britain, Sept. 11, 1968, 43,295/68
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 **12 Claims**

14α,17α - alkylidenedioxy- and 14α,17α - benzylidenedioxy-androstane-3-one compounds having a 11β-acetoxy or halogen substituent are disclosed. The new compounds possess progestational activity.

3,585,192
NEW ESTRANE DERIVATIVES
Arthur F. Marx and Hermanus J. Kooreman, Delft, Netherlands, assignors to Koninklijke Nederlandsche Gist-En Spiritusfabriek N.V., Delft, Providence of South Holland and Kingdom of the Netherlands
No Drawing. Filed Sept. 9, 1969, Ser. No. 856,483
Claims priority, application Great Britain, Sept. 11, 1969, 43,295/69
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 **11 Claims**

New 14α,17α-alkylidenedioxy and 14α,17α-benzylidenedioxyestrane derivatives are disclosed which possess oestrogenic and hypocholesterolenic activities.

3,585,193

HETEROCYCLIC COMPOUNDS

Gilbert Regnier, Sceaux, Roger Canevari, L'Hay les Roses, and Michel Laubie, Vaucresson, France, assignors to Societe en nom collectif "Science Union et Cie, Societe Francaise de Recherche Medicale," Suresnes, France

No Drawing. Filed Nov. 8, 1968, Ser. No. 774,478
Claims priority, application Great Britain, Nov. 15, 1967, 57,999/67
Int. Cl. C07d 99/04
U.S. Cl. 260—256.4 4 Claims

1-(3',4'-methylenedioxybenzyl)-piperazines substituted in 4-position by (1) pyrimidin-4-yl, pyrazinyl, s-triazinyl, or quinazolinyl unsubstituted or substituted by one or two alkyl, alkoxy or amino groups, or (2) pyrimidin-2-yl monosubstituted by halogen, carboxy, carbalkoxy, or caralkoxymethoxy, or disubstituted by alkoxy and carboxy or carbalkoxy.

These compounds possess bronchodilating and peripheral vasodilating properties.

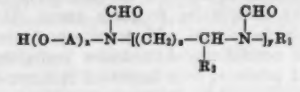
3,585,194

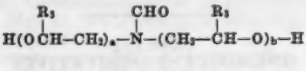
FORMAMIDO-CONTAINING HYDROXY COMPOUNDS

Norman A. Leister, Huntingdon Valley, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

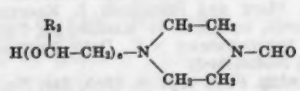
No Drawing. Original application Aug. 11, 1967, Ser. No. 659,888, now Patent No. 3,451,933, dated June 24, 1969. Divided and this application Jan. 17, 1969, Ser. No. 792,160
Int. Cl. C07d 51/70
U.S. Cl. 260—268 2 Claims

Formamido-containing alkenylsuccinates useful as dispersants, corrosion inhibitors and anti-wear agents, particularly in lubricating oil and fuel compositions are disclosed. The formamide compounds are prepared by reacting (1) an alkenylsuccinic anhydride, an alkenylsuccinic acid or an alkenylsuccinamic acid and (2) at least one formamido-containing hydroxy compound of the present invention having the formula:

(A) 

(B) 

or

(C) 

wherein A is alkylene, R_1, R_2 and R_3 are hydrogen or hydrocarbon, *a*, *b*, *c*, *x*, *y* and *z* are integers and *y* may be zero.

3,585,195

STABILIZATION OF AQUEOUS SOLUTIONS OF CERTAIN ACID SUBSTITUTED SPECTRAL SENSITIZING DYES

Donald W. Heseltine and Frank G. Webster, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Original application Jan. 19, 1966, Ser. No. 521,529. Divided and this application May 23, 1969, Ser. No. 843,257
Int. Cl. C09b 23/04, 23/06, 23/10
U.S. Cl. 260—240.65 5 Claims

Aqueous solutions of acid substituted photographic spectral sensitizing dyes having a pH of about 6 to 7.5 are provided, said solutions exhibiting excellent stability against loss of density during storage in comparison to similar aqueous dye solutions having a higher or lower pH.

3,585,196

MERCAPTO PYRIDAZINEDIONES

William A. Bolhofer, Frederick, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Feb. 1, 1968, Ser. No. 702,182
Int. Cl. C07d 51/04
U.S. Cl. 260—247.1 5 Claims

4,5 - dimercapto - 1,2 - dihydropyridazinediones having substituents attached to each of the nitrogen atoms of the pyridazine nucleus which are prepared by treating the corresponding N,N'-substituted 4,5-dihalopyridazinedione with a hydrosulfide. The substituted 4,5-dimercapto-1,2-dihydropyridazinediones are useful as inhibitors of gastric acid secretion.

3,585,197

1,2-DIHYDRO-1,3,5-TRIAZINE DERIVATIVES

Michael C. Seidel, Levittown, and Kenneth L. Viste, Warminster, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 785,366, Dec. 19, 1968. This application Apr. 22, 1970, Ser. No. 30,998
Int. Cl. C07d 55/18
U.S. Cl. 260—249.5 11 Claims

Novel compounds belonging to the class of 1-alkyl-4-(mono or dialkylamino)-1,2-dihydro-1,3,5-triazin-2-one and 1 - alkyl - 4 - (mono or dialkylamino)-1,2-diyhdro-1,3,5-triazine-2-thione. These compounds are particularly useful for the control of plant growth.

3,585,198

HOMOPYRIMIDAZOLE DERIVATIVES, PROCESS FOR THE PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Zoltan Meszaros, Jozsef Knoll, and Peter Szentmiklosi, Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara RT, Budapest, Hungary

No Drawing. Filed Nov. 1, 1967, Ser. No. 679,640
Claims priority, application Hungary, Nov. 2, 1966, CI-670
Int. Cl. C07d 51/48
U.S. Cl. 260—251 3 Claims

Analgesic and antipyretic 3-carbalkoxy or 3-carbethoxy-6,7,8,9 - tetrahydro-4H-pyrido [1,2a] pyrimidin-4-ones which also have a narcosis potentiating effect.

3,585,199

{4-[3-(POLYAZAHETEROCYCLIC)ALKANOYL] PHENOXY}ALKANOIC ACIDS

Edward J. Cragoe, Jr., Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed May 25, 1967, Ser. No. 641,122
Int. Cl. C07d 57/48
U.S. Cl. 260—256 3 Claims

{4 - [3 - (polyazaheterocyclic)alkanoyl]phenoxy}alkanoic acids, a class of compounds possessing diuretic and saluretic properties for use in treating conditions associated with electrolyte and fluid retention and prepared by the addition of a polyazaheterocycle to a [4-(2-alkylideneacyl)phenoxy]alkanoic acid in the presence of a base followed by acidification to precipitate the product.

3,585,200

4,4'-ALKYLENE BIS(SEMICARBAZIDE) AND DERIVATIVES THEREOF

Chester Stephen Sheppard and Ronald Edward MacLeay, Tonawanda, N.Y., assignors to Pennwalt Corporation

No Drawing. Filed June 9, 1966, Ser. No. 556,263
Int. Cl. C07d 51/64
U.S. Cl. 260—268 4 Claims

A new composition of matter consisting of alkylene bis(benzoylsemicarbazides) useful as intermediates in the preparation of blowing agents for producing foamed polymers.

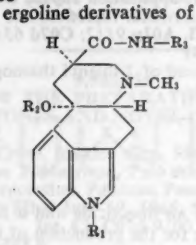
3,585,201

10-ALKOXY 9,10-DIHYDRO ERGOLINE DERIVATIVES

Federico Arcamone, Luciano Dorigotti, Alfredo Glaesser, and Silvio Redaelli, Milan, Italy, assignors to Società Farmaceutici Italia, Milan, Italy

No Drawing. Filed June 26, 1968, Ser. No. 740,108
Claims priority, application Italy, June 28, 1967, 17,750/67
Int. Cl. C07d *43/20*
U.S. Cl. 260—268 7 Claims

Described are ergoline derivatives of the formula:

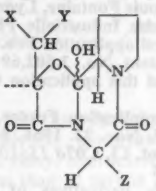


where

R_1 is selected from the group consisting of H and alkyl having from 1 to 4 carbon atoms,

R_2 is an alkyl having from 1 to 4 carbon atoms,

R_3 is selected from the group consisting of



where

X and Y are selected from the group consisting of H and CH_3;

Z is selected from the group consisting of benzyl, isopropyl and isobutyl.

These compounds have among other properties a higher adrenolytic hypotensive activity.

Also described is a process for their preparation.

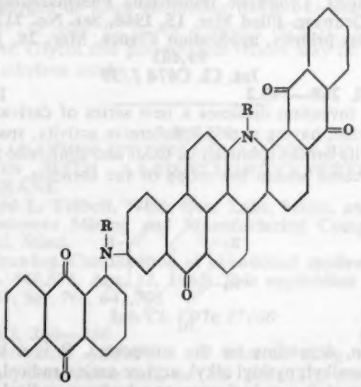
3,585,202

DIBENZANTHRONE TYPE VAT DYES

Charles W. C. Stein, Union, N.J., assignor to GAF Corporation, New York, N.Y.

No Drawing. Filed Dec. 29, 1967, Ser. No. 694,377
Int. Cl. C07d *37/00*
U.S. Cl. 260—274 2 Claims

An olive drab vat dyestuff of relatively low infra-red reflectance having the formula:



wherein R is alkyl or cycloalkyl of 1–6 carbon atoms.

3,585,203

N-BENZYL - 2-(BENZYL AND p-ALKOXY-BENZYL)-3,4-DIALKYL-1,2,5,6-TETRAHYDROPYRIDINES

Noel F. Albertson, East Greenbush, and William F. Wetterau, Albany, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

No Drawing. Filed Sept. 25, 1967, Ser. No. 670,391
Int. Cl. C07d *29/38*
U.S. Cl. 260—290 4 Claims

Process, and intermediates useful therein, for obtaining certain 1,2,3,4,5,6-hexahydro-8-(H or OH)-2,6-methano-3-benzazocines valuable as pharmaceutical intermediates by catalytic hydrogenolysis of the corresponding N-benzyl compounds, the latter being produced by Grignard reaction of a benzylmagnesium halide with an N-benzylpyridinium halide to yield an N-benzyl-2-benzyl-1,2-dihydropyridine, reducing this to the corresponding tetrahydropyridine, and cyclizing this product by heating with a strong mineral acid to obtain the 1,2,3,4,5,6-hexahydro-3-benzyl-8-(H or OH)-2,6-methano-3-benzazocine.

3,585,204

α,α-DIPHENYLPIPERIDINEACETIC ACIDS AND CONGENERS

Robert W. Hamilton, Wilmette, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Sept. 19, 1968, Ser. No. 761,003
Int. Cl. C07d *29/24*
U.S. Cl. 260—294 9 Claims

Preparation of the captioned compounds and their anti-algal, anti-germinant, anti-inflammatory, and anti-fungal properties are disclosed.

3,585,205

THIONOPHOSPHONIC ACID ESTERS OF SUBSTITUTED 2-HYDROXY-3-CYANO-6-PYRIDINES

Karl-Julius Schmidt, Wuppertal-Vohwinkel, Christa Fest, Wuppertal-Elberfeld, and Ingeborg Hammann, Cologne, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 17, 1968, Ser. No. 745,394
Claims priority, application Germany, July 26, 1967, F 53,058
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 6 Claims

Thionophosphonic acid esters of substituted 2-hydroxy-2-hydroxy-3-cyano- and -3-carbamyl-pyridines which have cidal properties. The pyridine may be substituted in 4-position with a methoxy-methyl, ethoxy-methyl, carbethoxy or methyl radical and in 5-position with chlorine or bromine. The thionophosphonic acid moiety carries C_{1-3} radical directly bound to the phosphorus and another connected thereto through an oxygen atom.

3,585,206

CERTAIN 5-PHENETHYL-PICOLINIC ACID DERIVATIVES

Peter J. L. Daniels, Cedar Grove, N.J., assignor to Schering Corporation, Bloomfield, N.J.

No Drawing. Filed Mar. 26, 1969, Ser. No. 810,825
Int. Cl. C07d *31/36*
U.S. Cl. 260—295 5 Claims

This application relates to novel 5-(β-phenethyl)-picolinic acids and certain derivatives thereof and to their use as hypoglycemic agents.

3,585,207

WELL DISPERSED WATER VEHICLE COATING SUSPENSION AND METHOD FOR PREPARING SAME

Robert W. Repsher, Kinnelon, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 5, 1968, Ser. No. 781,515
Int. Cl. F21k *2/00*; C09k *1/00*
U.S. Cl. 252—301.3R 12 Claims

A well dispersed water vehicle coating suspension and method of preparing same for applying a highly adherent

luminescent coating onto a substrate. The suspension comprises finely divided adherence promoting particles and finely divided luminescent material uniformly dispersed in a water lacquer system. An aqueous solution is prepared in which determined amounts of aluminum oxide adherence promoting particles are uniformly dispersed. A water soluble polyacrylic acid binder is then mixed into this aqueous solution. The amount of water soluble binder added is controlled with respect to the amount of adherence promoting particles to insure that the particles remain dispersed and do not flocculate. The coating suspension is then applied to a substrate, typically the interior of a fluorescent lamp envelope by a conventional method.

3,585,208

MANUFACTURE OF BENZOXAZOLES

Fred H. Rash and Charles E. Swanson, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Aug. 1, 1968, Ser. No. 749,281
Int. Cl. C07d *85/48*
U.S. Cl. 260—307 **8 Claims**

Manufacture of 2-benzoxazoles by reacting an aromatic acid ester such as methyl p-toluate with an o-aminophenol in the presence of a catalytic amount of a tin or titanium esterification catalyst. The reaction is carried out at a temperature of about 150° C. to about 350° C., and the preferred catalyst is either a dialkyl tin oxide or a titanium tetra-alkoxide.

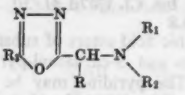
3,585,209

OXADIAZOLE DERIVATIVES AND PROCESS FOR PREPARING SAME

Christian Derappe, Gretz, France, assignor to Chimie et Synthese de Picardie, Pont de Metz, France

No Drawing. Filed Nov. 29, 1966, Ser. No. 597,511
Claims priority, application France, Dec. 14, 1965, 42,121; Mar. 14, 1966, 53,265
Int. Cl. C07d *85/54*
U.S. Cl. 260—307 **10 Claims**

The invention relates to oxadiazole derivatives of the formula:



(I)

wherein R and R_3 are each hydrogen or lower alkyl and R_1 and R_2 are each alkyl or cycloalkyl (5–6 carbon atoms). These derivatives have an effect on the central nervous system and are useful for treating cardiovascular diseases.

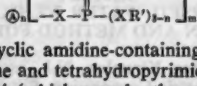
3,585,210

PHOSPHATE ESTERS OF CYCLIC AMIDINES

Derek Redmore, St. Louis, Mo., assignor to Petrolite Corporation, Wilmington, Del.

No Drawing. Filed Sept. 11, 1967, Ser. No. 666,953
Int. Cl. C07d *49/34*
U.S. Cl. 260—309.6 **6 Claims**

Esters of cyclic amidines and phosphoric acids, including oxygen, sulfur and oxygen and sulfur-containing phosphoric acids, as illustrated by esters of the formula



where Ⓐ is a cyclic amidine-containing radical, for example imidazoline and tetrahydropyrimidine, X is oxygen and/or sulfur; R′ (which may be the same or different) is hydrogen or an alcohol moiety; *n* is 1–3, and *m* is a number determined by the number of hydroxy groups on the cyclic amidine. These compounds, among other uses, are employed as corrosion inhibitors.

3,585,211

WITHDRAWN

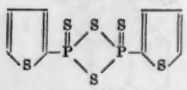
3,585,212

2-THIENYL THIONOPHOSPHINE SULFIDE

Hajime Hirai, Minoo-shi, Japan, and Hirosuke Yoshioka, Austin, Tex., assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed Oct. 18, 1968, Ser. No. 768,900
Claims priority, application Japan, Oct. 31, 1967, 42/70,436
Int. Cl. A01n *9/12*; C07d *63/12*
U.S. Cl. 260—329P **1 Claim**

A novel compound of 2-thienyl thionophosphinesulfide having the formula,



which is useful as an insecticide and a fungicide as well as an intermediate for the production of insecticides, fungicides and the like.

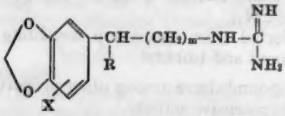
3,585,213

BENZODIOXOLE DERIVATIVES OF GUANIDINE

Darius Molho, Boulogne-sur-Seine, Eugene Boschetti, Venissieux, and Louis Fontaine, Lyon, France, assignors to Lipha, Lyonnaise Industrielle Pharmaceutique

No Drawing. Original application Feb. 21, 1967, Ser. No. 617,463, now Patent No. 3,502,695, dated Mar. 24, 1970. Divided and this application Oct. 29, 1969, Ser. No. 870,934
Claims priority, application France, Feb. 28, 1966, 51,313; Nov. 22, 1966, 84,498
Int. Cl. C07d *13/10*
U.S. Cl. 260—340.5 **10 Claims**

The benzodioxole derivatives of guanidine of the formula



in which *m* is equal to 0 or 1, X is a member of the group formed by hydrogen and bromine and R is a member of the group formed by hydrogen and the hydroxy radical, and their acid addition salts, useful as hypotensive agents.

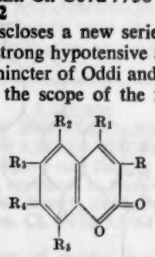
3,585,214

HYDROXYL DERIVATIVES OF COUMARINE AND PROCESSES FOR THE PREPARATION THEREOF

Eugene Boschetti, Venissieux, Darius Molho, Boulogne-sur-Seine, and Louis Fontaine, Lyon, France, assignors to Lipha, Lyonnaise Industrielle Pharmaceutique

No Drawing. Filed Mar. 15, 1968, Ser. No. 713,316
Claims priority, application France, Mar. 20, 1967, 99,483
Int. Cl. C07d *7/38*
U.S. Cl. 260—343.2 **1 Claim**

This invention discloses a new series of derivatives of coumarine, having strong hypotensive activity, spasmolytic activity on the sphincter of Oddi and choleretic activity, which come within the scope of the formula.



wherein, depending on the compound, R is a hydroxy, alkyl, aralkyl, pyridyl alkyl, aryl or amino radical, R_1, R_2, R_3, R_4 and R_5 are hydrogen or a hydroxy radical.

3,585,215

FORMYL CYCLOPENTA (C) PYRANS AND AMINO SUBSTITUTED COMPOUNDS

Peter Willibrord Thies, Hannover, Germany, assignor to Kali-Chemie Aktiengesellschaft, Hannover, Germany

No Drawing. Filed Oct. 4, 1968, Ser. No. 765,003
Int. Cl. C07d 7/32
U.S. Cl. 260—345.2 6 Claims

Formyl cyclopenta(c)pyrans, and the amidino, carbamoyl and thiocarbazone thereof. The compounds are chemotherapeutic agents, useful in the treatment of microbial infections, analgesic and sedatives.

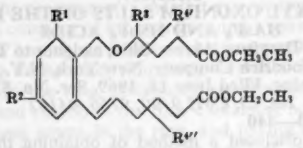
3,585,216

PROCESS FOR THE PREPARATION OF BENZOIC ACID LACTONES AND NOVEL INTERMEDIATES THEREFOR

Alexander D. Cross, Mexico City, Mexico, and John H. Fried and Ian T. Harrison, Palo Alto, Calif., assignors to Syntex Corporation, Panama, Panama

No Drawing. Filed July 19, 1966, Ser. No. 566,204
Int. Cl. C07d 9/00
U.S. Cl. 260—345.8 3 Claims

1. A compound selected from those of the formula:



wherein

each of R^1 and R^2 is hydrogen, hydroxy, lower alkoxy, halo, cyclopentyloxy, tetrahydrofuran-2-yloxy, tetrahydropyran-2-yloxy, hydrocarbon carboxylic acyl or acyloxy of less than 12 carbon atoms or, when taken together, 4,5-benzo;

R^3 is hydrogen or (lower) alkyl; and

each of $R^{4'}$ and $R^{4''}$ is halo or the group (C_nH_{2n})—H in which n has a value of from 0 to 6, provided that at least one of $R^{4'}$ and $R^{4''}$ is hydrogen, and the corresponding diacid derivatives thereof.

3,585,217

PRODUCTION OF ETHYLENE OXIDE

Eckart Titzenthaler, Oberhausen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Oct. 4, 1967, Ser. No. 672,695
Claims priority, application Germany, Oct. 6, 1966, P 12 79 007.7–42
Int. Cl. C07d 1/14
U.S. Cl. 260—348.5 9 Claims

Production of ethylene oxide by reaction of ethylene with oxygen or gases containing oxygen at temperatures of 150° to 400° C. in the presence of silver silicate as catalyst. Glycol and polyethylene oxides may be prepared from ethylene oxide.

3,585,218

PREPARATION OF DIFLUORAMINES BY OXIDATION WITH 1,1-BIS(FLUOROXY)PERFLUOROALKANE

Richard L. Talbott, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Continuation of abandoned application Ser. No. 448,575, Apr. 12, 1965. This application May 24, 1967, Ser. No. 643,798
Int. Cl. C07c 27/00
U.S. Cl. 260—350 3 Claims

Fluorinative oxidations are effected using energized fluoroxy compounds such as $(FO)_2CF_2$. The products include selectively fluorinated compounds in which fluorine may replace hydrogen on carbon or nitrogen. Reduction products of the oxidant may include peroxy groups not initially present.

3,585,219

PROCESS FOR THE PRODUCTION OF SULFONATED PRIMARY AMINOANTHRAQUINONE BY CONVERSION OF AN N-CYCLOHEXYL-AMINOANTHRAQUINONE

Willy Braun, Heidelberg, and Manfred Ruske, Ludwigshafen (Rhine), Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Continuation-in-part of application Ser. No. 388,265, Aug. 7, 1964. This application Feb. 13, 1967, Ser. No. 615,359
Claims priority, application Germany, Aug. 13, 1963, B 73,096
Int. Cl. C09b 1/24
U.S. Cl. 260—371 5 Claims

This specification discloses the production of sulfonated aminoanthraquinones by the action of oleum on N-cyclohexylaminoanthraquinones at a temperature of from 50 to 160° C. Aminoanthraquinones are valuable intermediates for the production of dyestuffs.

3,585,220

NOVEL ANTHRAQUINONE DISPERSE DYES

Eiji Yamada, Takatsuki-shi, and Takashi Akamatsu, Ashiya-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Higashi-ku, Osaka, Japan

No Drawing. Filed Mar. 8, 1967, Ser. No. 621,446
Int. Cl. C09b 1/50
U.S. Cl. 260—376 6 Claims

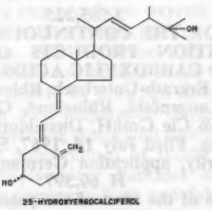
The dyes are of the class of anthraquinone disperse dyes areas and employable for dyeing synthetic fiber materials such as polyester in clear violet shade with exceedingly high fastnesses, especially fastness to sublimation at a high temperature.

3,585,221

25-HYDROXYERGOCALCIFEROL

Hector F. De Luca, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Mar. 24, 1969, Ser. No. 809,541
Int. Cl. C07c 171/10
U.S. Cl. 260—397.2 1 Claim



25-hydroxyergocalciferol. The compound is characterized by vitamin-D-like activity and is therefore suitable as an animal feed supplement.

3,585,222

STEROIDAL TRIETHYLAMMONIUM SALTS AND METHODS OF PREPARING THE SAME

John Paul Dusza, Nanuet, N.Y., Joseph Peter Joseph, Cliffside Park, N.J., and Seymour Bernstein, New York, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed May 23, 1969, Ser. No. 827,176
Int. Cl. C07c 169/10
U.S. Cl. 260—397.4 6 Claims

The preparation of steroidal triethylammonium salts by the fusion of equilenin or equilin and triethylamine-sulfur trioxide, is described. The products are useful as estrogenic agents.

3,585,223

STABILIZED OILS AND FATS OF VEGETAL AND ANIMAL ORIGIN, AND METHOD OF PREPARING THE SAME

Hitoshi Enei, Kawasaki-shi, and Shinji Okumura, Ayako Mega, and Shizuyuki Ota, Tokyo, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

No Drawing. Filed Feb. 27, 1968, Ser. No. 708,503
Claims priority, application Japan, Mar. 4, 1967, 42/13,671
Int. Cl. C11b *5/00*; A23d *5/04*
U.S. Cl. 260—398.5 5 Claims

Small amounts of cystine stabilize fats of animal or vegetal origin against oxidation by atmospheric oxygen, and the stabilizing effect is greatly enhanced if the cystine is briefly heated in the fat or oil to a temperature between 140° C. and the decomposition temperature of the fat or oil. The heat-treated mixture may be diluted with untreated fat or oil to an ultimate concentration of 0.02% at least cystine, an ultimate concentration of 0.1 to 1.5% being preferred. The stabilizing effect achieved is far superior to that of butylated hydroxytoluene and of similar synthetic antioxidants used as their highest permissible concentration.

3,585,224

PRODUCTION OF AMIDES AND POLYAMIDES

Friedrich Becke, Heidelberg, and Josef Gnad, Ludwigshafen (Rhine), Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen Rhineland, Germany

No Drawing. Filed Sept. 6, 1967, Ser. No. 665,734
Claims priority, application Germany, Sept. 9, 1966, P 12 83 220.1
Int. Cl. C09f *7/00*; C07c *103/12, 103/14, 103/32, 103/58*
U.S. Cl. 260—404 10 Claims

Production of amides and polyamides by reacting carboxylic nitriles with formic acid at 150° to 350° C. and superatmospheric pressure. Carboxylic amides are suitable for the production of plant protection agents. By hydrolysis of the polyamides, aminoacids are obtained which are suitable for the production of synthetic nutrient solutions for microorganisms.

3,585,225

PROCESS FOR THE CONTINUOUS PREPARATION OF ADDITION PRODUCTS OF PROPYLENE OXIDE TO CARBOXYLIC ACIDS

Werner Stein, Erkrath-Unterbach, Rhineland, and Wilfried Umbach, Langenfeld, Rhineland, Germany, assignors to Henkel & Cie GmbH, Dusseldorf, Germany

No Drawing. Filed July 14, 1967, Ser. No. 653,319
Claims priority, application Germany, Sept. 1, 1966, H 60,397
The portion of the term of the patent subsequent to Sept. 22, 1987, has been disclaimed
Int. Cl. C11c *3/10*
U.S. Cl. 260—410.6 10 Claims

This invention relates to an improved process for the continuous production of addition products of propylene oxide with organic carboxylic acids which comprises in combination (a) continuously passing a mixture of an organic compound selected from the group consisting of organic carboxylic acids free from reactive hydrogen atoms other than the carboxyl hydrogen atom and addition products of propylene oxide thereof, with propylene oxide in a molar ratio of 1:1 to 1:6 in the presence of from 0.05% to 1.5% by weight of alkali metal, based on said organic compound, of an alkali metal propyloxylation catalyst, through a jacketed reactor having a small cross-section compared to its length, under a pressure at which the reaction mixture is liquid, (b) heating said mixture while passing through said jacketed reactor to attain a maximum temperature of between about 230° C. and 390° C., (c) maintaining said mixture in said jacketed reactor for about 10 to 150 seconds, whereby an addition product is formed, (d) immediately cooling said addition product to a temperature below 180° C. after said addition product leaves said jacketed reactor, and (e) recovering said addition product. More particularly, the invention relates to the preparation of products with a high content of propyleneglycol-1,2 carboxylic acid monoesters in high volume-time-yields.

3,585,226

SPIROCYCLIC LEAD COMPOUNDS

Kenneth C. Williams, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Filed Feb. 10, 1969, Ser. No. 798,158
Int. Cl. C07f *7/24*
U.S. Cl. 260—437 7 Claims

The synthesis of 5-plumbaspiro [4.4] nonane and related compounds from a di-Grignard reagent and lead halide.

3,585,227

TRIALKYL OXONIUM SALTS OF THE HPF_6, $HAsF_6$ AND $HSbF_6$ ACIDS

Max Peter Dreyfuss, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed June 18, 1969, Ser. No. 834,507
Int. Cl. C07f *9/90, 9/66, 9/102*
U.S. Cl. 260—440 6 Claims

There is disclosed a method of obtaining the trialkyl oxonium salts of the HPF_6, $HAsF_6$ and $HSbF_6$ acids wherein a solution of the acid which may contain water is mixed with an alkylene oxide and a dialkyl ether at low temperatures. Such method results in a precipitate of the desired trialkyl oxonium salt which, surprisingly, is stable in the resulting water-containing medium. Trialkyl oxonium hexafluorophosphates are obtained with HPF_6 solutions containing up to 40%/wt. of water. The product may be purified by multiple recrystallization from solvent solution. The resulting salts are useful as ingredients in highly active catalysts for the polymerization of cyclic ethers such as tetrahydrofuran and also as strong alkylating agents in many chemical syntheses.

3,585,228

γ-NITRATOPROPYL SILANES

Sandor Barcza, West Orange, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Filed Feb. 25, 1969, Ser. No. 802,209
Int. Cl. C07f *7/10*
U.S. Cl. 260—448.2N 5 Claims

Lower alkyl silanes having from 1 to 4 of the alkyl groups replaced by a γ-nitratopropyl function are useful pharmaceutically e.g., (γ-nitratopropyl)trimethylsilane.

3,585,229

DECOLORIZATION OF AROMATIC ISOCYANATES

Daniel T. Christian, San Leandro, and Melvin Look, El Cerrito, Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

No Drawing. Filed June 21, 1968, Ser. No. 738,788
Int. Cl. C07c *119/04*
U.S. Cl. 260—453 5 Claims

Discolored aromatic polyisocyanates containing methylenediphenyl diisocyanates are decolorized by the addition of diphenyl-decyl phosphite. The decolorization is effected by reacting or chemically bonding the hydrolyzable chloride attached to the methylene bridge of the diisocyanate.

3,585,230
STABLE LIQUID POLYISOCYANATE COMPOSITIONS
Elias A. Woycheshin, Livermore, and Donald L. Scott, Hayward, Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
No Drawing. Filed July 17, 1968, Ser. No. 745,409
Int. Cl. C07c *119/04;* C08g *22/44;* C08a *51/62*
U.S. Cl. 260—453 17 Claims
Liquid aromatic polyisocyanates are stabilized against crystallization and sediment formation at temperatures below their solidification point by the addition of a stabilizing amount of an organo-silicone.

3,585,231
PREPARATION OF AROMATIC ISOCYANATES
Thomas J. Hurley, Jr., Madison, and Martin A. Robinson, Orange, Conn., assignors to Olin Mathieson Chemical Corporation
No Drawing. Filed June 21, 1968, Ser. No. 738,828
Int. Cl. B01j *11/84;* C07c *119/04;* C07d *31/40*
U.S. Cl. 260—453 15 Claims
The process for preparing an organic isocyanate by reacting an organic nitro compound with carbon monoxide in the presence of a catalyst system comprised of a palladium complex of a Lewis base and a univalent anion. The Lewis base is preferably a heteroaromatic nitrogen-containing compound containing between five and six members in the ring, containing no element other than nitrogen and carbon in the ring, containing no more than two nitrogen atoms in the ring, and having at least two double bonds in the ring such as pyridine and isoquinoline. The univalent anion is preferably NCS^-, N_3^-, NCO^-, and CN^-. The catalyst system may also include a second component such as molybdenum trioxide or another metal oxide.

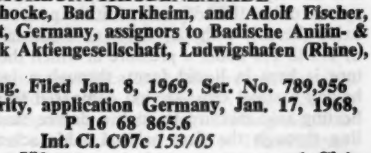
3,585,232
LOW MOLECULAR WEIGHT ACYL PEROXYCARBONIC ESTERS
Roger N. Lewis, Pinole, and Ronald L. Friedman, San Rafael, Calif., assignors to Argus Chemical Corp., Brooklyn, N.Y.
No Drawing. Filed Dec. 26, 1967, Ser. No. 693,187
Int. Cl. C07c *69/00*
U.S. Cl. 260—463 6 Claims
Low molecular weight (4–7 carbon atoms) acyl peroxycarbonic aliphatic esters having use as polymerization initiators are disclosed.

3,585,233
PROCESS FOR THE PREPARATION OF HYDROXYBENZONITRILES
Basil Jason Heywood, Hornchurch, England, assignor to May & Baker Limited, Dagenham, Essex, England
No Drawing. Filed Sept. 19, 1968, Ser. No. 760,983
Claims priority, application Great Britain, Sept. 21, 1967, 43,107/67
Int. Cl. C07c *121/02*
U.S. Cl. 260—465F 11 Claims
4-hydroxybenzonitriles optionally substituted in the 3- and/or 5-positions by halogen, and alkali metal salts thereof, are prepared by demethylating corresponding 4-methoxybenzonitriles by reaction with an alkali metal compound of the Formula MA, wherein M represents sodium or potassium and A represents the cyano group or M represents lithium and A represents chlorine, at a temperature of at least 170° C. in a reaction medium consisting of at least one compound RR_1NCOR_2, wherein R represents C_1–C_4 alkyl, R_1 and R_2 each represent C_1–C_4 alkyl or together represent alkylene and form with the —N—CO— group a 4- or 5-membered saturated heterocyclic group (e.g. N-methylpyrrolidone), and optionally treating the alkali metal salt of the 4-hydroxybenzonitrile.

3,585,234
PROCESS FOR PRODUCING 4-PHENYL-3-OXO-BUTANE-1 CARBOXYLIC ACID ESTERS
Hirosuke Yoshioka, Nishinomiya-shi, Nobushige Itaya, Minoo-shi, and Yutaka Matsumoto, Oita-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Higashi-ku, Osaka, Japan
No Drawing. Filed Oct. 9, 1967, Ser. No. 673,984
Claims priority, application Japan, Dec. 26, 1966, 41/85,485
Int. Cl. C07c *67/00, 69/94, 65/20*
U.S. Cl. 260—476R 5 Claims
A process for producing 4-phenyl-3-oxo-butane-1-carboxylic acid esters comprising reacting a 4-phenyl-4-cyano-3-oxo-butane-1-carboxylate with orthophosphoric acid or aqueous orthophosphoric acid, thereby hydrolyzing and removing the cyano group of said ester prior to hydrolysis of the ester portion thereof. The reaction progresses smoothly and quickly, and even when more or less amount of free carboxylic acid is by-produced, the free acid can be converted into the desired ester by adding the corresponding alcohol to the reaction system. In the case of cyano-carboxylic acid also, the reaction proceeds smoothly and therefore according to the present process, the desired ester can be produced also from this starting material by adding the corresponding alcohol to the reaction system.

3,585,235
3-SUBSTITUTED - 2 - TRIFLUOROMETHYL-ACRYLOYL FLUORIDES AND THE PROCESS FOR THEIR PREPARATION
David C. England and Leonard Solomon, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Feb. 28, 1967, Ser. No. 619,162
Int. Cl. C07c *51/58, 63/00*
U.S. Cl. 260—544 10 Claims
Described are substituted trifluoromethylacryloyl fluorides having a 3-substituent selected from dialkylamino arylalkylamino, aryl, 5-membered ring aromatic heterocyclics having in addition to one or more carbon atoms the following ring members: oxygen, sulfur, imino, alkylimino, oxygen and up to 3 nitrogens, sulfur and up to 3 nitrogens, imino and up to 3 nitrogens, and alkylimino and up to 3 nitrogens, benzo-5-membered ring aromatic heterocyclics having in addition to one or more carbon atoms the following ring members: oxygen, sulfur, imino, alkylimino, oxygen and nitrogen, sulfur and nitrogen, imino and nitrogen, and alkylimino and nitrogen. The heterocyclic substituents are bonded to the trifluoromethylacryloyl fluoride moiety by a carbon-carbon bond. The claimed process for their preparation comprises the reaction of a formyl-containing compound with perfluoromethacrylyl fluoride at temperatures of 0–200° C. 3-substituted-2-trifluoromethylacryloyl fluorides are useful as treating agents for paper products and fabrics.

3,585,236
N-(α-HYDROXY-β,β,β-TRICHLOROETHYL)-2,6-DICHLOROTHIOBENZAMIDE
Albrecht Zschocke, Bad Durkheim, and Adolf Fischer, Mutterstadt, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed Jan. 8, 1969, Ser. No. 789,956
Claims priority, application Germany, Jan. 17, 1968, P 16 68 865.6
Int. Cl. C07c *153/05*
U.S. Cl. 260—551 1 Claim
A new and valuable thiobenzamide derivative having the formula:



and a method of controlling unwanted plants therewith. The compound has a strong herbicidal effect and does not damage crop plants when used for controlling unwanted plants growing between the same.

3,585,237
CRYSTALLIZATION OF UREA
Jack D. Terrana, Tampa, and Leo A. Miller, Lakeland, Fla., assignors to Wellman-Lord, Inc.
Filed Sept. 29, 1966, Ser. No. 582,830
Int. Cl. C07c *127/00*
U.S. Cl. 260—555 **13 Claims**

Crystalline urea having a low biuret content and a low bulk density is prepared by introducing a concentrated, aqueous solution of urea to a crystallization zone under conditions effecting evaporation of some of the water from the solution and formation of urea crystals on the solution surface. The crystals are skimmed from the solution surface onto a urea-adhering surface, for example, onto a rotating drum.

3,585,238
2-(p-TOLUENESULFONAMIDO)-5-NITROBENZOPHENONE
Ctirad Podesva, Montreal, Quebec, and Geza Kohan, La Salle, Quebec, Canada, assignors to Delmar Chemicals Limited, Lachine, Quebec, Canada
No Drawing. Filed Nov. 27, 1968, Ser. No. 779,623
Claims priority, application Canada, Nov. 29, 1967, 006,408
Int. Cl. C07c *143/78*
U.S. Cl. 260—556 **1 Claim**

A 2-halo-5-nitrobenzophenone is reacted with an alkali metal salt of a primary sulfonamide. The resultant products are new and valuable intermediates which can be hydrolyzed in high yields to obtain 2-amino-5-nitrobenzophenone which is itself a valuable intermediate in the preparation of 7-nitro-5-phenyl-1,4-3H-benzodiazepin-2(1H)-one, a psychotropic agent.

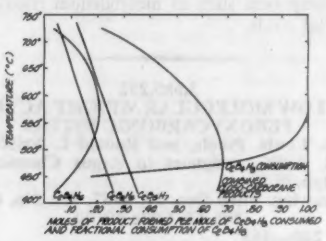
3,585,239
PROCESS FOR THE CONTINUOUS PREPARATION OF ADDITION PRODUCTS OF ETHYLENE OXIDE TO AMINES
Werner Stein, Erkrath, Unterbach, and Wilfried Umbach, Langenfeld, Rheinland, Germany, assignors to Henkel & Cie GmbH, Dusseldorf, Holthausen, Germany
Filed July 19, 1968, Ser. No. 746,164
Claims priority, application Germany, Oct. 4, 1967, H 64,076
Int. Cl. C07c *89/02*
U.S. Cl. 260—563 **9 Claims**

This invention relates to a process for the continuous production of ethoxylated amines by (a) continuously passing a mixture of (1) organic compounds having reactive hydrogen atoms selected from the group consisting of primary amines, secondary amines, addition products of ethylene oxide thereof, addition products of propylene oxide thereof and addition products of butylene oxide thereof, with (2) ethylene oxide in a molar ratio of 1:1 to 1:6 under a pressure at which the reaction mixture is kept in liquid form, through a jacketed reactor having a small cross-section compared to its length, (b) heating said mixture to such a degree that, after travelling through the first half of said jacketed reactor, a maximum temperature of about 240° C. is attained, and that in the second half of said jacketed reactor said mixture passes through a maximum temperature of between about 250° to 360° C. (c) maintaining said mixture in said jacketed reactor for about 10 to 150 seconds, (d) maintaining the interval between the obtention of said highest maximum temperature and the time said mixture leaves said jacketed reactor between about 5% to 30% of the total duration of time said mixture is maintained in said jacketed reactor, (e) cooling said addition product to a temperature below 150° C., immediately after said addition product leaves said jacketed reactor, and (f) recovering said addition product. The ethoxylated amines so produced are obtained in a purer and practically colorless form as compared with prior art processes.

3,585,240
PROCESS FOR STABILIZING AQUEOUS FORMALDEHYDE SOLUTIONS
Jacob Ackermann and Roberto Croce, Milan, Italy, assignors to Societá Italiana Resine S.p.A., Milan, Italy
No Drawing. Filed June 4, 1968, Ser. No. 734,249
Claims priority, application Italy, June 15, 1967, 17,215/67
Int. Cl. C07c *47/04*
U.S. Cl. 260—606 **8 Claims**

Aqueous formaldehyde solutions are stabilised by tetra-azo-phenalenes, particularly decahydro-1,4,7,9-b-tetra-azo-phenalenes.

3,585,241
HIGH YIELD SYNTHESIS OF THE SMALLER CLOSO-CARBORANES, 1,5-$C_2B_3H_5$, 1,6-$C_2B_4H_6$ AND 2,4-$C_2B_5H_7$
Jerome F. Ditter, Covina, Eugene B. Klusmann, West Covina, and Robert E. Williams, La Canada, Calif., assignors to Aerojet-General Corporation, El Monte, Calif.
Filed Feb. 19, 1969, Ser. No. 800,661
Int. Cl. C07f *5/02*
U.S. Cl. 260—606.5B **7 Claims**



This patent describes a process for the high yield syntheses of the three closo-carboranes, 1,5-$C_2B_3H_5$, 1,6-$C_2B_4H_6$, and 2,4-$C_2B_5H_7$ from the nido-carborane, 4,5-$C_2B_4H_8$ in a continuous flow process utilizing short-term heating of 4,5-$C_2B_4H_8$ at relatively high temperatures. At about 460° C. and 10 mm. absolute pressure, the above-mentioned closo-carboranes are produced in the approximate ratio of 40:20:40 respectively, with essentially negligible loss of 4,5-$C_2B_4H_8$, while at higher temperatures and pressures the product ratio changes somewhat and the yields decrease accordingly.

3,585,242
AROMATIC MONOALKOXYALDEHYDE ACETALS
Ernst Roos, Cologne-Flittard, and Klaus Wagner, Cologne, Buchheim, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Sept. 9, 1968, Ser. No. 758,584
Claims priority, application Germany, Oct. 17, 1967, F 53,800
Int. Cl. C07c *43/30*
U.S. Cl. 260—613 **5 Claims**

Reacting halogenated benzenes containing at least two dichloromethyl groups with monohydric or polyhydric alcohols to obtain monoalkoxybenzaldehyde acetals which are useful as herbicides.

3,585,243

PROCESS FOR THE PREPARATION OF ORTHO- AND PARA-DIHYDRIC PHENOLS FROM THE CORRESPONDING ORTHO- AND PARA-HYDROXY PHENALDEHYDES

Peter S. Gradeff, Somerset, N.J., assignor to Rhodia Inc., New York, N.Y.

No Drawing. Filed Nov. 21, 1968, Ser. No. 777,881
Int. Cl. C07c *39/08, 43/22*
U.S. Cl. 260—613 10 Claims

A process is provided for oxidizing ortho- and para-hydroxy phenaldehydes to form ortho- and para-dihydric phenols, using hydrogen peroxide together with alkali metal carbonates or bicarbonates, or alkaline earth metal hydroxides.

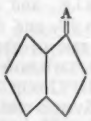
3,585,244

DIHALOMETHYLENE-BICYCLO[3.3.0] OCTANES

Rostylow Dowbenko, Gibsonia, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Application Mar. 11, 1966, Ser. No. 554,231, now Patent No. 3,422,155, dated Jan. 14, 1969, which is a continuation-in-part of application Ser. No. 254,575, Jan. 29, 1963. Divided and this application May 23, 1968, Ser. No. 754,164
Int. Cl. C07c *23/32;* C05g *3/08*
U.S. Cl. 260—648 3 Claims

This invention relates to compounds of the formula:



in which substituent A is $—CX_2$, wherein X is chlorine or bromine.

3,585,245

2-HALO-1,1,1,3,3-PENTAFLUOROPROPANES

Bernard M. Regan, Chicago, Ill., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

No Drawing. Original application Aug. 29, 1967, Ser. No. 663,952, now Patent No. 3,499,089, dated Mar. 3, 1970. Divided and this application July 7, 1969, Ser. No. 862,550
The portion of the term of the patent subsequent to Jan. 9, 1985, has been disclaimed
Int. Cl. C07c *19/08*
U.S. Cl. 260—653 3 Claims

2-chloro-1,1,1,3,3-pentafluoropropane and 2-bromo-1,1,1,3,3-pentafluoropropane, useful as nonflammable inhalation anesthetics, and the intermediate 1,1,1,3,3-pentafluoropropan-2-ol and p-toluenesulfonate ester of said alcohol used in preparing the inhalation anesthetics.

3,585,246

METHOD OF INITIATING AN OXYCHLORINATION REACTION

Raymond M. Vancamp, New Martinsville, W. Va., Gerald E. Duffy, Monroe, La., and Charles E. Drum, Woodsfield, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 516,342, Dec. 27, 1965. This application Sept. 5, 1968, Ser. No. 757,634
Int. Cl. C07c *21/10, 21/12, 17/02*
U.S. Cl. 260—654 7 Claims

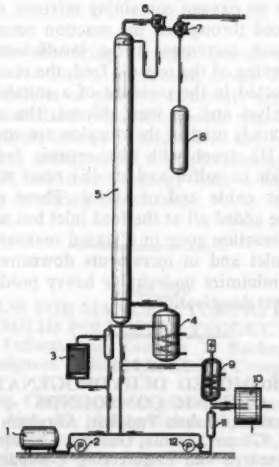
A method of initiating oxychlorination reactions is described. The order of additions of the reactants for a fluidized bed oxychlorination reaction system and guidelines for adding the various materials are set forth. Specifically, the material to be chlorinated, the chlorinating agent and oxygen utilized to conduct the oxychlorination reaction are added to a fluidized bed of oxychlorination catalyst particles, the bed being fluidized initially by an inert gas and maintained at reaction temperature. Specific procedures for initiating reactions of 1,2-dichloroethane with elemental chlorine and oxygen to produce perchloroethylene and trichloroethylene and for producing 1,2-dichloroethane from ethylene are described. Various organic materials such as methane, ethane, ethyl chloride, 1,2 - dichloroethane, 1,1 - dichloroethane, ethylene, propane, propyl chloride, propene and butane are disclosed as typical feed materials to be oxychlorinated in accordance with the start-up procedures recited. In the procedure described the catalyst particles are first fluidized and maintained at reaction temperature for the oxychlorination which is to be conducted. Air is typically utilized for this purpose. The chlorinating agent is then fed to the reaction system while a reduction in the flow of air corresponding to the quantity of chlorinating agent fed is accomplished. The material to be chlorinated is then added to the bed to provide a mixture of chlorinating agent and the material to be chlorinated. When a rise in temperature of the reaction bed is observed, the addition of the oxygen to the fluidized bed begins. In this manner safety from pre-reactions, explosions and excessive burning is provided.

3,585,247

PROCESS FOR THE MANUFACTURE OF A MIXTURE CONSISTING SUBSTANTIALLY OF 1,2-DICHLOROBUTENE-(2), 1,3-DICHLOROBUTENE-(2) AND 2,3-DICHLOROBUTENE-(1)

Kurt Sennewald and Klaus Gehrmann, Knapsack, near Cologne, and Günter Viertel, Bruhl, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

Filed July 30, 1968, Ser. No. 748,784
Claims priority, application Germany, Aug. 17, 1967, P 12 71 107.8-42
Int. Cl. C07c *21/04*
U.S. Cl. 260—654 2 Claims



Improvement in or modification of the process described in copending application Ser. No. 587,434, now U.S. Pat. No. 3,413,365 comprising withdrawing resulting dichlorobutene mixture at a reflux ratio of $R=1$ to 20; withdrawing the completely condensed matter or reflux matter near the column base; introducing such matter into a circulation evaporator and recycling it later in vapor form from said evaporator into the reactor; continuously supplying the said circulation evaporator with metered quantities of fresh tetrachlorobutane-containing 1,2,3-trichlorobutane coming from a reservoir, the said tetrachlorobutane-containing 1,2,3-trichlorobutane being supplied at the

same rate as produced dichlorobutene mixture is withdrawn from the column; and, once the 1,2,3-trichlorobutane in the reactor is found to contain about 30% by weight tetrachlorobutane, introducing a portion of the reflux matter withdrawn near the column base into a stirrable cooler; centrifuging the 2,2,3,3-tetrachlorobutane, which is found partially to crystallize in the said cooler at a temperature of 0° C., and withdrawing it; and recycling mother liquor to the said circulation evaporator.

3,585,248

SULFUR OXIDE DEHYDROGENATION OF ORGANIC COMPOUNDS

Israel S. Pasternak, Noel J. Gaspar, Abraham D. Cohen, and Mohan Vadekar, Sarnia, Ontario, Canada, assignors to Esso Research and Engineering Company

Filed Dec. 2, 1968, Ser. No. 780,528
Int. Cl. C07c *15/10, 5/20*
U.S. Cl. 260—669 **26 Claims**

Organic compounds having a dehydrogenatable carbon to carbon bond are dehydrogenated in a vapor phase reaction by contact with a sulfur oxide over a low surface area catalyst. Yields of the dehydrogenated, i.e., more unsaturated, product and/or catalyst life can be increased by utilizing a catalyst containing minor amounts of an alkali or alkaline earth metal.

3,585,249

SULFUR PROMOTED OXIDATIVE DEHYDROGENATION OF ORGANIC COMPOUNDS

Abraham D. Cohen, Noel J. Gaspar, and Israel S. Pasternak, Sarnia, Ontario, Canada, assignors to Esso Research and Engineering Company

No Drawing. Filed Dec. 2, 1968, Ser. No. 780,570
Int. Cl. C07c *5/20, 15/10*
U.S. Cl. 260—669 **23 Claims**

Organic compounds having a dehydrogenatable carbon-carbon bond are dehydrogenated in the vapor phase by contact with a mixture of sulfur containing compounds and oxygen or an oxygen containing mixture, the oxygen being introduced throughout the reaction zone in staged increments, each increment being insufficient to cause substantial burning of the organic feed, the reaction being preferably effected in the presence of a suitable low surface area catalyst and an inert diluent; the sulfur containing compounds used in the reaction are comprised of those which (i) react with the organic fed to yield hydrogen sulfide or sulfur and/or (ii) react with oxygen to yield sulfur oxide and/or sulfur. These compounds cannot only be added all at the feed inlet but may also be added to the reaction zone in a staged manner, i.e., both at the feed inlet and in increments downstream of the feed inlet, to minimize undesirable heavy product formation and catalyst deactivation.

3,585,250

SULFUR PROMOTED DEHYDROGENATION OF ORGANIC COMPOUNDS

Israel S. Pasternak, Mohan Vadekar, Abraham D. Cohen, and Noel J. Gaspar, Sarnia, Ontario, Canada, assignors to Esso Research and Engineering Company

No Drawing. Filed Dec. 2, 1968, Ser. No. 780,603
Int. Cl. C07c *5/20, 15/10*
U.S. Cl. 260—669 **25 Claims**

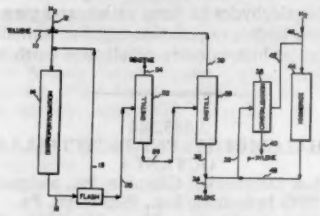
Organic compounds having a dehydrogenatable carbon-to-carbon bond are dehydrogenated in the vapor phase with sulfur and/or sulfur oxide dehydrogenation agents, the total dehydrogenation agent requirement being added incrementally at more than one point to the dehydrogenation zone, the total requirement of dehydrogenation agent being equal to the sum of the amounts of the several incremental additions, the reaction preferably being effected in the presence of a suitable low surface area catalyst and an inert diluent.

3,585,251

ALKYL TRANSFER OF ALKYL AROMATICS WITH GROUP VI–B METALS ON BORIA-ALUMINA

Stephen M. Kovach and Ronald A. Kmecak, Ashland, Ky., assignors to Ashland Oil & Refining Company, Houston, Tex.

Filed Dec. 19, 1968, Ser. No. 785,231
Int. Cl. B01j *11/06;* C07c *3/58, 15/08*
U.S. Cl. 260—672 **8 Claims**



A process for the alkyl transfer of mono-alkyl aromatics including contacting a mono-alkyl aromatic feed material, particularly toluene, with a catalyst comprising a Group VI–B metal, such as chromium, molybdenum or tungsten, and boria deposited on an alumina base, at a temperature between about 800 to 1100° F., a pressure of about 0 to 2000 p.s.i.g., and a liquid hourly space velocity of about 0.1 to 10, and in the presence of hydrogen introduced at a rate of about 1 to 10 moles hydrogen per mole of hydrocarbon feed. Promoters selected from Group I, Group II, Group IV and the rare earth metals of the Periodic System can also be added to the catalyst. Deactivated catalysts may be periodically rejuvenated by discontinuing the introduction of the aromatic feed material and purging with hydrogen and the catalyst can be reactivated by calcination in an atmosphere such as air. Where toluene is the feed material, the alkyl transfer product may be distilled to separate benzene, toluene and xylenes, the toluenes may be recycled to the alkyl transfer step, the xylenes may be crystallized to separate para-xylene from the remaining xylenes, the mother liquor from the crystallization step may thereafter be isomerized to readjust the para-xylene content and the product of isomerization may be recycled to the crystallization zone.

3,585,252

NOVEL HYDROCARBON PREPARATION PROCESS

Joseph P. Kennedy, Cranford, N.J., assignor to Esso Research and Engineering Company

No Drawing. Filed Jan. 17, 1969, Ser. No. 792,127
Int. Cl. C07c *9/00*
U.S. Cl. 260—676 **15 Claims**

Highly branched hydrocarbons suitable as high-octane fuels can be obtained rapidly and efficiently by a coupling reaction in which reactive organo-halides are contacted with an organo aluminum, under reaction conditions, in a non-reactive solvent.

3,585,253

PRODUCTION OF ALKYLARYL SULFONATES INCLUDING THE STEP OF DEHYDROGENATING NORMAL PARAFFINS WITH IMPROVED CATALYST

Shuan K. Huang, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Mar. 22, 1968, Ser. No. 715,133
Int. Cl. C07c *5/18, 3/50;* B01j *11/22*
U.S. Cl. 260—683.3 **5 Claims**

Methods for preparing detergent type alkylaryl sulfonates including the steps of separating normal paraffins from a petroleum fraction, dehydrogenating the normal paraffins to form mono-olefins, reacting the mono-olefins

with a monocyclic aryl compound such as benzene and sulfonating the resulting alkylaryl hydrocarbons. Novel dehydrogenation catalysts comprising one or more Group I–B metals, such as copper, and one or more noble metals of the platinum or palladium families deposited upon low acidity alumina are employed for the dehydrogenation of n-paraffins. The procedure using such novel catalysts results in improved conversions and the production of a purer product.

3,585,254

SELF-EXTINGUISHING POLYESTER RESINS AND PROCESS THEREFOR

Donald A. Buck, New City, N.Y., assignor to Reichhold Chemicals, Inc., White Plains, N.Y.

No Drawing. Filed Nov. 18, 1969, Ser. No. 877,834
Int. Cl. C08g *17/12*; C08f *21/02*
U.S. Cl. 260—869 **7 Claims**

A polymerizable blend of (A) a polymerizable linear polyester resin and (B) a polymerizable monomer containing a terminal ethylenic unsaturation; and the process of making same.

(A) is prepared by reacting a glycol of the C_2–C_{10} range with a cycloolefinic acid, brominating the polyester thus formed and reacting resultant product with an alpha-beta unsaturated dicarboxylic acid to an acid value of 30 or less.

3,585,255

ELECTRICALLY SUPERIOR POLYESTER FILM CONTAINING POLYSTYRENE OR POLYIONOMER ADDITIVE POLYMER

Robert J. Sevenich, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Sept. 23, 1968, Ser. No. 761,818
Int. Cl. B29g *7/00*; C08g *39/10, 51/54*
U.S. Cl. 260—873 **5 Claims**

Physically blending minor amounts of polystyrene or polyionomers into polyester resin which is to be extruded into a film and thereafter oriented, imparts unexpectedly superior electrical properties to the ultimate film. The film also displays improved "slip" properties.

3,585,256

DYEABLE POLYOLEFIN- OR POLYESTER-COMPOSITION CONTAINING AN IMIDE INTERPOLYMER

Ronald W. Fuest, Wayne, N.J., assignor to Uniroyal, Inc., New York, N.Y.

No Drawing. Filed Oct. 25, 1968, Ser. No. 770,836
Int. Cl. C08f *29/12*; C08g *39/10, 51/58*
U.S. Cl. 260—873 **15 Claims**

The present invention relates to shaped articles made from fiber-forming poly (alpha-olefins) or polyesters to which is added between about 0.5% and 10% of an interpolymer of maleic anhydride imide an alkylvinyl ether and optionally an aryl substituted vinyl compound. Such products are dyeable with anionic dyestuffs.

3,585,257

POLYMERIZATION PROCESS FOR PREPARING BLOCK COPOLYMERS

Francis X. Mueller, Jr., and Henry L. Hsieh, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Nov. 2, 1967, Ser. No. 679,991
Int. Cl. C08f *29/12*; C08g *17/02*
U.S. Cl. 260—880 **10 Claims**

A coplymer is formed by providing a polymer having at least one

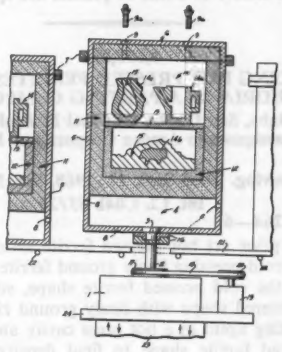
group wherein M is an alkali metal such as lithium, reacting the polymer with an alkene oxide such as ethylene oxide, and contacting the reaction product thereof with at least one lactone such as epsilon-caprolactone to polymerize the lactone and form a lactone polymer block on the first provided polymer.

3,585,258

METHOD OF FIRING CERAMIC ARTICLES UTILIZING MICROWAVE ENERGY

Melvin L. Levinson, 1 Meinzer St., Avenel, N.J. 07001

Original application Oct. 19, 1965, Ser. No. 497,851. Divided and this application May 21, 1969, Ser. No. 836,683
Int. Cl. C04b *33/32*; H05b *7/18*
U.S. Cl. 264—26 **8 Claims**



A process for firing ceramic articles in which the articles are fed into a microwave cavity wherein a plurality of particles of resistive materials are located in a predetermined fixed relationship with respect to the articles. Microwave energy is emitted to the particles so as to generate a multitude of arcs therethrough to thereby convert said microwave energy into a high refractory heat energy for firing the articles.

3,585,259

PROCESS FOR MANUFACTURING FRIABLE SOLID POLYESTER PRODUCTS

Edwin B. Lefferts and Kenneth T. Barkey, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 777,489, Nov. 20, 1968, which is a continuation-in-part of abandoned application Ser. No. 578,139, Sept. 9, 1966. This application Aug. 15, 1969, Ser. No. 850,661
Int. Cl. B29d *27/04*; C08g *17/003, 53/08*
U.S. Cl. 264—50 **4 Claims**

It has been found that by (a) incorporating an inert gas into molten polyester prepolymer prior to the time the prepolymer is solidified (after which it is to be ground and subjected to a further polymerization step via a solid state reaction) and (b) maintaining the gas dispersed through the prepolymer as it is solidified, makes it possible to economically grind solidified prepolymeric material having significantly higher intrinsic viscosities than was heretofore believed possible. The use of prepolymer having higher I.V.'s simplifies the subsequent polymerization step.

3,585,260

CHROMIC ACID BONDED CHROMIC OXIDE AGGLOMERATES PRODUCED BY SPRAY DRYING

Kenneth Urmston Holker and Rosemary Green, Harrogate, England, assignors to Albright & Wilson Limited, Birmingham, England

No Drawing. Continuation-in-part of application Ser. No. 746,248, July 22, 1968. This application July 29, 1969, Ser. No. 845,898

Claims priority, application Great Britain, Aug. 1, 1967, 34,214/67; Dec. 11, 1968, 58,845/68

Int. Cl. C04b *35/12, 33/30*

U.S. Cl. 264—63 5 Claims

Granular chromium oxide suitable for producing uniform, high purity flame sprayed coatings is prepared by slurrying finely divided chromium oxide in aqueous chromic acid and forming the slurry into dried granules by spray drying which are further heated to convert the chromic acid to chromic oxide, either in a calciner or during the course of flame or plasma arc spraying.

3,585,261

PRODUCING HOT PRESSED FERRITES UTILIZING THORIA AS A PARTING COMPOUND

Paul D. Baba, San Carlos, and Joel E. Zneimer, Belmont, Calif., assignors to Ampex Corporation, Redwood City, Calif.

No Drawing. Filed Sept. 12, 1968, Ser. No. 759,525

Int. Cl. C04b *35/26*

U.S. Cl. 264—65 1 Claim

In the prior art hot pressed ferrite articles have been made by cold pressing finely ground ferrite compositions, sintering the cold pressed ferrite shape, surrounding the cooled sintered shape with finely ground zirconia or alumina parting agent in a hot press cavity and hot pressing the sintered ferrite shape to final density. The present invention uses thoria in place of the zirconia or alumina parting agent which eliminates any reaction between the parting agent and the ferrite that would affect the magnetic properties of the ferrite.

3,585,262

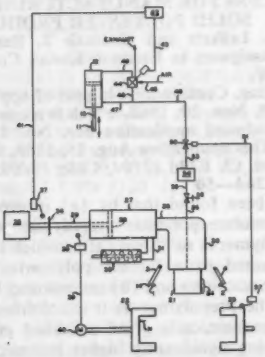
PARISON PREPINCHING AND PREBLOWING

Thomas J. Nave and Mark E. Larkin, Bartlesville, Okla., assignors to Phillips Petroleum Company

Original application Apr. 4, 1966, Ser. No. 539,834, now Patent No. 3,425,090, dated Feb. 4, 1969. Divided and this application Aug. 2, 1968, Ser. No. 749,779

Int. Cl. B29c *17/07*

U.S. Cl. 264—89 3 Claims



An open ended parison is continuously extruded. After a length intermediate the final length has been extruded, the bottom of the parison is sealed. Preblow fluid is introduced into the sealed parison to balloon same, and then the parison is enclosed in a mold and blow molded.

3,585,263

MELT-EXTRUSION OF OXIDIZABLE MELT WITH AGENT RELEASING NON-OXIDIZING GASES

Nestor Slyvain Rassart, Drummondville, Quebec, Canada, assignor to Chemcell Limited, Montreal, Quebec, Canada

No Drawing. Filed Feb. 6, 1969, Ser. No. 798,578

Int. Cl. B28b *3/20*

U.S. Cl. 264—176 5 Claims

A melt-extrusion process having reduced tendency to oxidize an oxidizable melt-extrudable fragmented polymeric material, the improvement which comprises feeding in a melt-extrusion apparatus at least one oxidizable melt-extrudable polymeric material in fragments and an agent releasing between about room temperature and 50° C. below the softening point of said polymeric material, non-oxidizing gases, said polymeric material fragments being impermeable to said agent and said non-oxidizing gases. This process is particularly suitable for the melt-extrusion of stereoregular polyolefin, especially polypropylene, into products having funicular structure.

3,585,264

PROCESS FOR SPINNING POLYAMIDE FILAMENTS CONTAINING NUCLEATING AGENTS

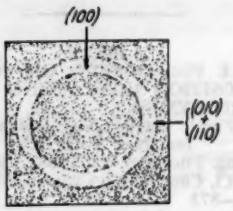
Peter R. Thomas, Pontypool, England, assignor to Imperial Chemical Industries Limited, London, England

Original application Sept. 14, 1966, Ser. No. 579,273. Divided and this application Sept. 27, 1968, Ser. No. 834,915

Claims priority, application Great Britain, Sept. 14, 1965, 39,122/65

Int. Cl. B28b *3/20*

U.S. Cl. 264—211 21 Claims



A polyamide containing a polyamide nucleating agent is melt spun.

3,585,265

METHOD OF MAKING A POMADE ASSEMBLY

Vincent A. Motsavage, Suffern, N.Y., and James F. Kinney, Hackensack, N.J., assignors to Avon Products, Inc., New York, N.Y.

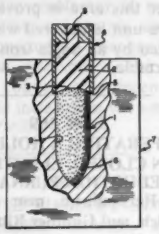
Original application Dec. 21, 1966, Ser. No. 603,636, now Patent No. 3,453,056, dated July 1, 1969. Divided and this application Sept. 5, 1968, Ser. No. 775,218

Int. Cl. B29d *3/00*

U.S. Cl. 264—255 5 Claims

The method of manufacturing a lipstick assembly having a carrier cup and a lipstick pomade including the steps of placing the cup within the open end of a mold having the shape of a lipstick pomade to be produced,

filling the mold cavity and cup with a molten pomade through an opening in the bottom of the cup, permitting



the pomade to solidify, and removing the cup with the pomade therein from the mold cavity.

3,585,266

LIVE RABIES VIRUS VACCINE AND METHOD FOR THE PRODUCTION THEREOF

Jerrell B. Emery, Zionsville, and James L. Bittle, Indianapolis, Ind., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Feb. 24, 1969, Ser. No. 801,743

Int. Cl. C12k 5/00, 9/00

U.S. Cl. 424—89 12 Claims

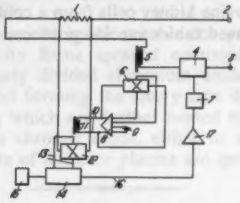
The preparation of live modified rabies virus vaccine is described. A method for propagating live modified rabies virus of the ERA strain by a tissue culture technique employing bovine kidney cells from a continuous cell line, and an improved rabies vaccine produced by such method are described.

ELECTRICAL

3,585,267
ELECTRONIC CIRCUITS FOR TEMPERATURE CONTROL

Derek Obersby, Hillcroft Park, England, assignor to Quickfit & Quartz Limited, Stone, Staffordshire, England

Filed Feb. 14, 1969, Ser. No. 799,268
Claims priority, application Great Britain, Feb. 20, 1968, 8274/68
Int. Cl. C03b *5/02*; H05b *3/62*
U.S. Cl. 13—6 **8 Claims**

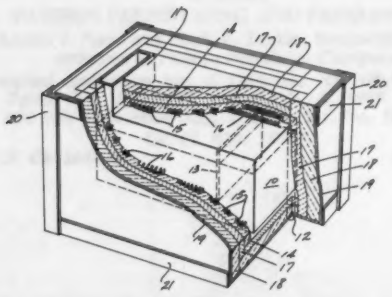


A resistance path through which an electric current is passed is maintained at a desired temperature by monitoring the current through the path, developing a signal which is indicative of the reciprocal of the current, multiplying this signal by a signal which is indicative of the voltage across the path to provide a signal representative of the resistance of the path, and comparing the signal representative of the resistance with a reference signal to provide an error signal which is used to control the flow of current through the path.

3,585,268
METAL-LINED GLASS MELTER

Joseph R. Monks; Henry E. Roll, and Robert R. Rough, all of Toledo, Ohio, assignors to Owens-Illinois, Inc.

Filed Jan. 4, 1968, Ser. No. 695,616
Int. Cl. C03b *3/00*
U.S. Cl. 13—6 **3 Claims**

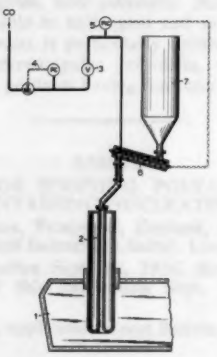


In the melting of glass, particularly of glasses which are of the low melting point variety in the range of 1,600° F., the melters conventionally used have been rather massive units. A metal-lined melter of lightweight construction is disclosed herein. The melter is compact, highly mobile, in the sense that it may be moved from one location to another location, and has great utility in the production of molten colorant additive for direct addition to a large capacity glass forehearth. The melter is constructed of one-eighth inch thick "Hastelloy X" alloy. A plurality of Kanthal heating elements are mounted in a ceramic muffle in substantially surrounding relationship with respect to the metal melter. An insulating, outer covering over this area is provided by two layers of firebrick. The entire unit is covered with a Transite material and totally supported by an angle iron frame s as to render the melting unit portable.

3,585,269
PROCESS OF OPERATING A HOLLOW ELECTRODE FOR USE IN CLOSED, ELECTROTHERMAL REDUCTION FURNACES

Johannes Krause, Hermulheim, near Kiln; Wilhelm Portz, Kierdorf-Lechenich, and Gunther Rittershausen, Knapsack, near Cologne, all of, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack bei Cologne, Germany

Filed July 28, 1969, Ser. No. 845,412
Claims priority, application Germany, Aug. 2, 1968, P 17 58 759.6
Int. Cl. H05b *7/00*
U.S. Cl. 13—33 **3 Claims**

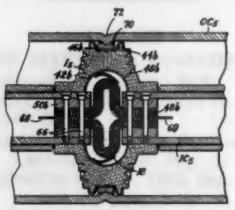


Operation of a hollow electrode for use in closed electrothermal reduction furnaces by flowing solid raw material therethrough using a stream of gas, and delivering the raw material to the furnace. The flow of material through the hollow electrode is automatically arrested once the gas pressure prevailing inside the furnace, downstream of the hollow electrode, approaches a predetermined limiting value selected so as to correspond to 40—60 percent of the electrode operation gas pressure.

3,585,270
GAS-INSULATED TRANSMISSION LINE

John George Trump, 9 Cambridge St., Winchester, Mass.

Filed July 31, 1968, Ser. No. 749,135
Int. Cl. H01b *9/06*
U.S. Cl. 174—13 **17 Claims**



A gas-insulated transmission line compatible with operation from low through EHV range. Insulating supports are

provided for maintaining the position of the inner conductor within the outer conductor while permitting longitudinal movement of the inner conductor in response to thermal buildup. Expansion joints connecting sections of the inner conductor adapt to longitudinal changes of the central conductor consistent with desirable electrical and mechanical operation. Couplings connecting adjacent outer conductors are designed for simple installation yet with sufficient rigidity to assure gastight operation.

3,585,271

GAS INSULATED BUSBAR INSTALLATIONS

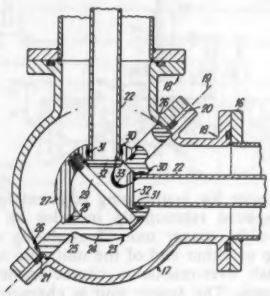
Edward Henry Reynolds, Dulwich, and Philip Robert Hartshorn, Watford, both of, England, assignors to British Insulated Callender's Cables Limited, London, England

Filed July 11, 1969, Ser. No. 840,961

Claims priority, application Great Britain, July 17, 1968, July 17, 1968, 34004/68; 34005/68

Int. Cl. H01b *9/06*

U.S. Cl. 174—15 **10 Claims**



A high voltage heavy current bus bar installation incorporates a tubular load-carrying conductor supported within a tubular outer enclosure to define an annular dielectric space which is filled with gas under high pressure. Gas is circulated at high pressure through the conductor and through an external heat exchanger independently of the means pressurizing the dielectric. A joint for adjacent sections of the installation provides for angular adjustment and includes mating connecting members sealed to the outer enclosures of the respective lengths and sealed to one another in a plane making an acute angle (preferably 45°) with the axis of each of the lengths. The conductors may be sealed together in a similar manner.

3,585,272

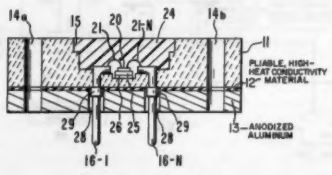
SEMICONDUCTOR PACKAGE OF ALUMINA AND ALUMINUM

Solomon Shatz, Santa Clara, Calif., assignor to Fairchild Camera and Instrument Corporation, Mt. View, Calif.

Filed Oct. 1, 1969, Ser. No. 862,851

Int. Cl. H05k *5/00*

U.S. Cl. 174—52S **9 Claims**



A semiconductor package capable of dissipating large amounts of power consists of a first portion of hard, electrically insulating material containing a cavity for holding a semiconductor ship and a second underlying portion of softer insulating material separated from the first portion by a layer of pliable, thermally conductive material.

3,585,273

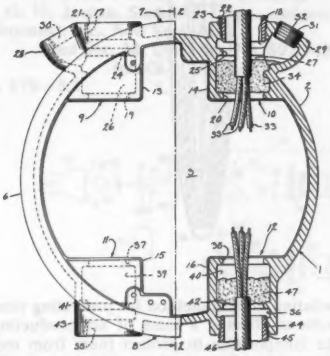
ENCLOSURE FOR ELECTRICAL APPARATUS IN HAZARDOUS LOCATIONS

Arloe W. Paul, Milwaukee, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed May 14, 1969, Ser. No. 824,411

Int. Cl. H05k *5/04*

U.S. Cl. 174—65R **1 Claim**



The base member of an electrical apparatus enclosure is adapted for mounting to a vertical surface. Electrical conductors enter the enclosure through flasks integrally molded with the base member at the top and bottom. Each flask has a threaded exterior opening for receiving an electrical conduit, an interior opening inside of the enclosure, and a cavity formed between those openings to receive a sealer for sealing the interior of the conduit. The upper flasks are filled with the sealer through filling tubes, and the lower flasks are filled through the interior openings.

3,585,274

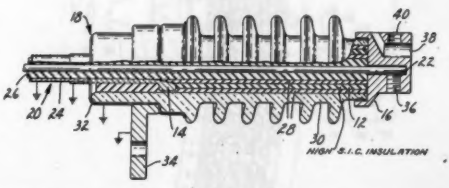
RELIEF OF DIELECTRIC STRESS IN HIGH VOLTAGE CABLE CONNECTIONS

Don R. Tomaszewski, Afton Township, Washington County, and Gerald A. Wyatt, Shoreview, both of, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sept. 15, 1969, Ser. No. 857,940

Int. Cl. H02g *15/02, 15/08*

U.S. Cl. 174—73 **14 Claims**



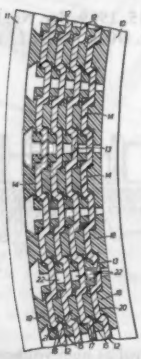
Dielectric stress control at high voltage cable terminations is achieved by surrounding the high stress areas of a high voltage cable with a tube composed of high permittivity homogeneous material including one or more titanates and/or titanium dioxide which tube makes contact at one end with a ground electrode contacting the shielding of the high

voltage cable. In a preferred embodiment, the tube also makes contact at the other end with a high voltage electrode making contact with the conductor of the high voltage cable.

3,585,275
KIT AND METHOD FOR ENCAPSULATING CONDUCTOR SPLICE CONNECTIONS
George W. Gillemot, 2331 20th St., Santa Monica, Calif., and John T. Thompson, 244 Loring St., Los Angeles, Calif.
Filed Feb. 19, 1970, Ser. No. 12,617
Int. Cl. H02g 15/04
U.S. Cl. 174—76 16 Claims

An encapsulating kit and method for protecting conductor splice connections utilizing a mass of nonconducting nonsetting gellike composition to protect them from moisture, corrosion, electrolytic action and the like hazards. The encapsulating composition has pronounced cohesive properties and ability to retain its integrity centrally of an impervious enclosure provided with a thick open-cell resilient lining. Splice connections can be added and withdrawn at will and the characteristics of the encapsulating composition remain stable indefinitely under wide range temperature conditions.

3,585,276
TRANSFORMER INSULATION CONSTRUCTION COMPRISING CONCENTRIC CYLINDERS AND SPACING STICKS
James Gilbert Beckett, Leeds, England, assignor to B. S. & W. Whitley Limited
Filed Nov. 7, 1969, Ser. No. 874,809
Claims priority, application Great Britain, Nov. 8, 1968, 52,961/68
Int. Cl. H01f 27/08, 27/30
U.S. Cl. 174—138E 6 Claims

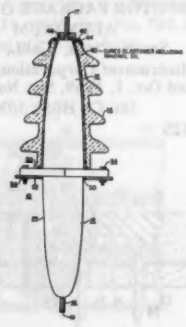


Transformer interwinding insulation construction which comprises a plurality of concentric spaced cylinders of insulating pressboard and a plurality of axially directed sticks arranged between each pair of adjacent cylinders for maintaining a radial spacing therebetween, integral portions of said cylinders adjacent each of the sticks forming lateral locating means for said sticks.

3,585,277
MIDSPAN ELECTRICAL CONDUCTOR SPACER
Paul E. Lewis, Mexico, Mo., assignor to A. B. Chance Company, Centralia, Mo.
Filed Nov. 17, 1969, Ser. No. 877,184
Int. Cl. H01b 17/16, 17/32; H02g 7/12
U.S. Cl. 174—146 14 Claims

A midspan spacer for maintaining adjacent high voltage conductors in spaced relationship includes an elongated, relatively lightweight spacer unit of insulating material, a conductor clamp at either end of the unit, and an insulator having high flash over-resistance characteristics adjacent each of the clamps. The spacer unit is characterized by a high compressive strength in relationship to its weight to withstand the substantial forces exerted thereon when the conductors tend to move relative to each other. All of the components of the spacer are held together by a bonding agent, and means is provided to load each of the bonds in compression, thereby utilizing the full load-bearing capacity of the bonding agent.

3,585,278
ELECTRICAL BUSHINGS HAVING INSULATING MEANS INCLUDING A CURED ELASTOMER CONTAINING MINERAL OIL
James F. Quirk, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Oct. 6, 1969, Ser. No. 863,827
Int. Cl. H01b 17/26
U.S. Cl. 174—152 7 Claims



An electrical bushing having insulating means surrounding an electrical conductor. At least a portion of the insulating means is formed of gelled transformer or mineral oil, held in

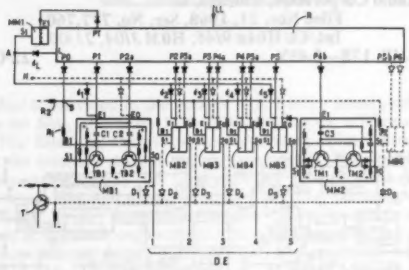
solution by a thermoset elastomeric binder, which adheres tenaciously to the structural members of the bushing, and has excellent electrical insulating qualities. A method of constructing a bushing is also disclosed in which the thermosettable elastomeric material containing the mineral oil is disposed between a solid insulating body portion of a bushing formed of a synthetic resin, and a weather shed formed of porcelain, with the elastomeric material being cured to form a bond between the elastomeric material and the porcelain, and between the elastomeric material and the solid insulating body portion of the bushing.

3,585,279

DEVICE FOR RECORDING CODED PULSES

Roger Teurnier, Rueil-Malmaison, France, assignor to C.I.T.-Compagnie Industrielle Des Telecommunications, Paris, France

Filed Dec. 23, 1968, Ser. No. 786,246
Claims priority, application France, Dec. 22, 1967, 133643
Int. Cl. H04l *3/00*
U.S. Cl. 178—23 **9 Claims**



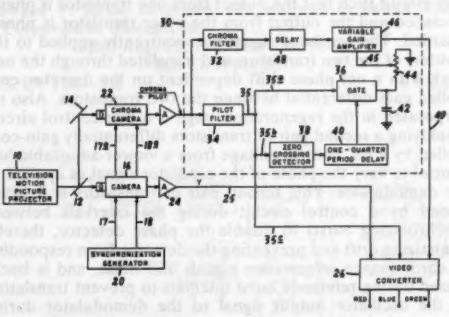
Device for recording coded pulses, in particular characters of a telegraphic code, comprising multivibrators corresponding to the units of the code to be identified, said multivibrators being connected to the outputs of a receiver, in particular a telegraphic code receiver, the change of state of a multivibrator causing the appearance of a polarity at one of the outputs of the device of sufficient duration to permit the control of a controlled circuit.

3,585,280

GAIN CORRECTION APPARATUS FOR COLOR PICTURE INFORMATION SIGNALS REPRODUCED FROM A RECORD MEDIUM

Renville H. McMann, Jr., New Canaan, Colo., assignor to Columbia Broadcasting System, Inc., New York, N.Y.

Filed June 11, 1969, Ser. No. 832,404
Int. Cl. H04n *9/48*
U.S. Cl. 178—5.2 **5 Claims**



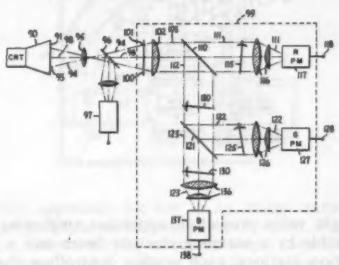
In the illustrative embodiment of the invention described herein, the superimposed pilot signal of a color information signal is supplied to a detector which produces a pulse each time the pilot signal crosses its zero axis. The pulses are delayed in time to align the pulses with the pilot signal at 90° from the axis crossing points and the delayed pulses are thereafter utilized to enable a sampling gate to which the pilot signal is also supplied. The output signal from the gate is smoothed and then supplied across a potentiometer to a variable gain amplifier to which the color carrier signal components of the color information signal are supplied to eliminate amplitude fluctuations in the color carrier signal components.

3,585,281

APPARATUS FOR OPTICALLY RESOLVING THE LIGHT DERIVED FROM THE SCANNING OF A TONAL IMAGE INTO COLOR COMPONENTS

Harold O. W. Jordan, Stamford, Conn., assignor to Printing Development, Inc., New York, N.Y.

Filed Dec. 22, 1967, Ser. No. 692,743
Int. Cl. H04n *5/42*
U.S. Cl. 178—5.4 **16 Claims**



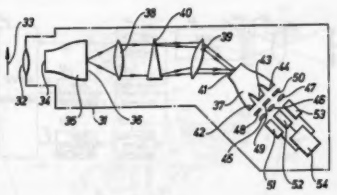
A color transparency is scanned by a beam from a spot moving over the screen of a cathode-ray tube. The modulated beam is divided by neutral beam splitters into secondary beams color filtered only by dichroic filters to yield color component beams incident on photomultipliers. Each beam-filter angle of incidence is variable between O° and 20°. An image of the copy is projected onto the tube screen by a light beam chopped at a rate rendering that image flickerless.

3,585,282

OPTICAL ARRANGEMENT FOR COLOR TELEVISION CAMERA EMPLOYING FIBER OPTICS

William Bell Allan, Leeds, England, assignor to The Rank Organization Limited, London, England

Filed May 6, 1969, Ser. No. 822,124
Claims priority, application Great Britain, May 13, 1968, 22,559/68
Int. Cl. H04n *9/08*
U.S. Cl. 178—5.4 **10 Claims**

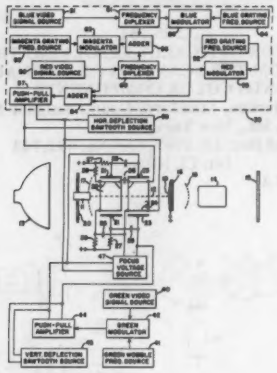


Apparatus for producing a plurality of images of different colors from a polychromatic image comprising an image dissector which splits the image into separate beams, a dispersing prism dispersing the beams into beams of differing colors and a light guide designed to the dissector and prism to gather the beams of each individual color and combine same into a colored image at the output end of the light guide.

3,585,283
OPTICAL PROJECTION SYSTEM WITH ENHANCED COLOR RESOLUTION

Michael Graser, Jr., Bedford, Mass., assignor to General Electric Company

Filed Sept. 24, 1969, Ser. No. 860,532
Int. Cl. H04n 9/00
U.S. Cl. 178—5.4 9 Claims

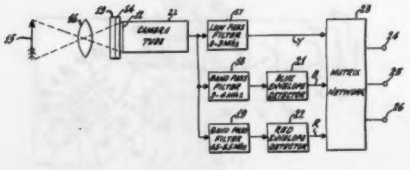


In light value projection apparatus employing a medium deformable by a scanning electron beam into a plurality of diffraction gratings, each grating controlling the light of a respective primary color, improved resolution of magenta light is achieved by furnishing only red and blue video signals below a selected cutoff frequency to red and blue modulators respectively, and by furnishing only the red and blue video signals above this frequency or the luminance signals above this frequency, to a magenta modulator. The magenta modulator carrier frequency is selected to exceed the beat frequency between the red and blue diffraction gratings. The red, blue and magenta modulator output signals are combined bore being applied to electron beam deflection plates.

3,585,284
COLORED LIGHT ENCODING FILTER

Albert Macovski, Palo Alto, Calif., assignor to RCA Corporation

Filed Nov. 12, 1968, Ser. No. 774,628
Int. Cl. H04n 9/06
U.S. Cl. 178—5.4 ST 25 Claims

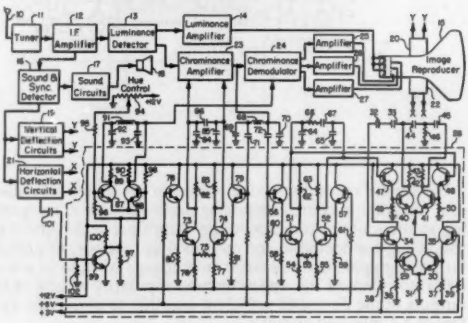


Light from a subject is projected through a color filter grating structure onto a photosensitive surface of a color television camera tube. A first grating component has cyan light transmissive (red light blocking) strips, which undesirably absorb some green light, alternating with strips which absorb green light to the same extent as the cyan strips. A second grating component has yellow light transmissive (blue light blocking) strips, which undesirably absorb some green light, alternating with strips which absorb green light to the same extent as the yellow strips. The strips of the two filter gratings are so arranged relative to one another that, when employed with a color television camera, as corresponding areas of the photosensitive target electrode are scanned by an electron beam, red and blue light-representative signals are generated as amplitude modulations of carrier waves respectively having two different relatively high fundamental frequencies. The modulated carrier waves are separated by band-pass filters and the respective separated outputs are detected to develop red and blue light-representative signals. A luminance signal is derived from the camera tube through a low pass filter and is matrixed with the red and blue light-representative signals to produce luminance and color difference signals. In one arrangement, the alternating partially light absorbing strips adjacent the cyan and yellow light transmissive strips are of neutral grey material and, in another arrangement, these strips are of magenta light transmissive material.

3,585,285
SUBCARRIER REGENERATION SYSTEM

John L. Rennick, Elmwood Park, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Nov. 21, 1968, Ser. No. 777,760
Int. Cl. H04n 9/46; H03f 3/04, 21/00
U.S. Cl. 178—5.4SY 22 Claims

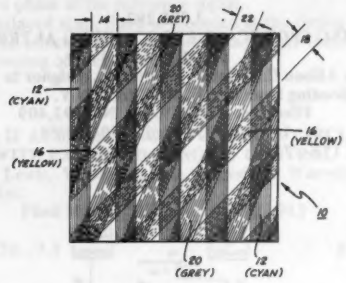


A subcarrier regeneration stage and control arrangement for a color television receiver includes a 3.58 MHz. crystal-controlled oscillator, a phase detector and a novel voltage-controllable phase shift network in the feedback loop of the oscillator for maintaining the oscillator in phase synchronism with a received NTSC reference burst signal. The phase shift network comprises a pair of transistors differentially gain-controlled by the phase detector output voltage and having their collectors coupled to respective ends of a passive phase shift circuit such that the output from one transistor is phase-advanced and the output from the other transistor is phase-retarded. The oscillator signal is concurrently applied to the emitters of the two transistors and translated through the network with a net phase shift dependent on the detector controlled gain differential between the two transistors. Also incorporated in the regeneration stage is a hue control circuit employing a second pair of transistors differentially gain-controlled by a DC control voltage from a viewer-adjustable hue control to vary the phase of the oscillator signal as applied to the demodulator. This second pair of transistors is forward biased by a control circuit during the intervals between synchronizing bursts to disable the phase detector, thereby minimizing drift and preventing the detector from responding to chrominance information signals and noise, and is back-biased during reference burst intervals to prevent translation of the oscillator output signal to the demodulator during these periods. Because the regeneration stage utilizes differentially paired transistors throughout and a minimum of inductive components, it is particularly well suited for construction in microelectronic form.

3,585,286
SPATIAL FILTER COLOR ENCODING AND IMAGE REPRODUCING APPARATUS AND SYSTEM

Albert Macovski, Palo Alto, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.

Filed Dec. 26, 1968, Ser. No. 787,051
Int. Cl. H04n 9/06
U.S. Cl. 178—5.4ST **19 Claims**

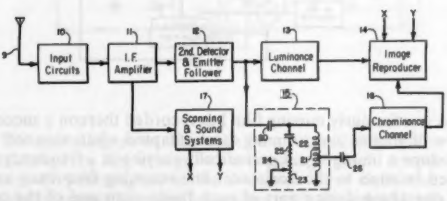


A filter is provided in the path of light from a scene, either live or on film, ultimately to be displayed as on a television tube. The filter has the property of encoding color information in the intensity pattern of light transmitted. The encoded intensity pattern may be used directly or recorded and regenerated. The encoding medium of the filter comprises at least three grids superimposed one upon another and disposed at different angles relative to a reference whereby at least four different bands of frequencies are generated when the encoded intensity pattern is scanned, as by a photocathode. That is, a first band of frequencies is generated including a waveform (a video signal) proportionate to variations in light intensity, two individual bands of frequencies are generated each in separate individual waveforms (video signals) modulated in accordance with intensity variations of a different one selected component color, and a fourth individual band of frequencies is generated in a waveform modulated in accordance with intensity variations in color components including still another selected component color. The frequency bands are separated by filters and used to generate a color picture on a color receiver by applying the waveform incorporating the intensity band of frequencies (the first band) to the receiver to give the general picture luminance information, applying the waveforms containing the second, third, and fourth bands of frequencies to a processor (e.g. the matrix of a colorplexer) for developing color difference signals that are applied to the receiver along with the first band of frequencies, thereby to develop a color balanced picture.

3,585,287
CHROMINANCE SIGNAL TAKEOFF NETWORK

Howard F. Jirka, Riverside, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Aug. 15, 1969, Ser. No. 850,568
Int. Cl. H04n 9/53
U.S. Cl. 178—5.4 **4 Claims**

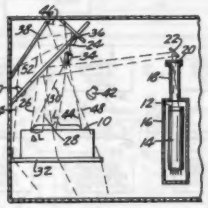


The chroma takeoff network, coupling the picture detector to the chrominance channel of a color receiver, comprises a first capacitor and an inductor connected in series across the output of the video detector and further comprises a second capacitor and a variable resistor connected in series across the inductor. The circuit values are proportioned so that the subcarrier component of the chrominance signal has essentially constant amplitude for all adjustments of the variable resistor.

3,585,288
PROJECTION APPARATUS FOR USE IN AN IMAGE TRANSDUCING SYSTEM

John G. Benjamin, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of application Ser. No. 672,663, Aug. 8, 1967, now Patent No. 3,452,981, which is a division of application Ser. No. 459,695, May 28, 1965, now Patent No. 3,358,554. This application June 16, 1969, Ser. No. 833,488
Int. Cl. H04n 3/00
U.S. Cl. 178—7.85 **1 Claim**

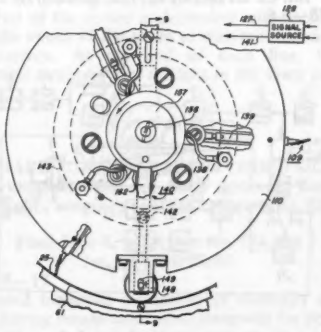


A projection apparatus for use in an image transducing system for projecting a substantially linear region, such as a line of indicia, from a display area to a target area of an incremental sensing device such as a vidicon tube, or of a source of illuminating radiation such as a cathode-ray tube, wherein only a segment of the line of indicia is instantaneously imaged at the target area, but is imaged to optimumly cover the target area, and wherein a mirror is disposed to rotate to scan across the display area to vary over a period of time the segment which is instantaneously provided at the target area in order to display the entire linear region across the target area over the period of time.

3,585,289
FACSIMILE RECORDING APPARATUS WITH CAM OPERATED PAPER CUTTER

Charles L. Huber, Marion; Frank L. Headd, and John J. Miller, Webster, all of, N.Y., assignors to Xerox Corporation, Rochester, N.Y. **Continuation of Ser. No. 804,334, Dec. 5, 1968, which is a continuation of Ser. No. 492,830, Oct. 4, 1965.**

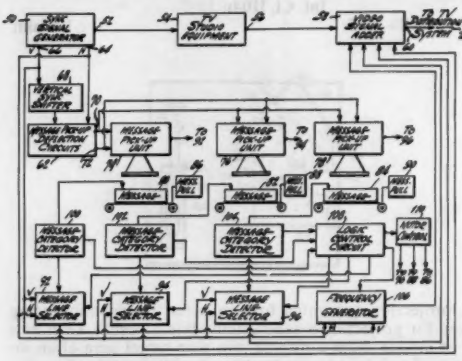
Filed Jan. 16, 1970, Ser. No. 3,508
Int. Cl. B23d 35/00; G01d 15/16; H04n 1/24
U.S. Cl. 178—6.6R **5 Claims**



A facsimile recording apparatus in which web recording material is advanced past a recording station in a configura-

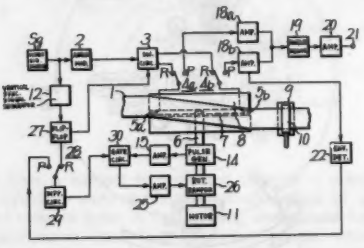
tion conforming to a portion of the circular path of a signal responsive liquid ink recording element supported on a rotating disc and a web cutting mechanism responsive to appropriate control signals cuts the web into lengths corresponding to the length of the document from which the information was transmitted.

3,585,290
CODING ARRANGEMENTS FOR MULTIPLEXED MESSAGES
Robert F. Sanford, Princeton Junction, N.J., assignor to RCA Corporation
Filed Jan. 29, 1968, Ser. No. 701,441
Int. Cl. H04n *7/08*
U.S. Cl. 178—5.6 **10 Claims**



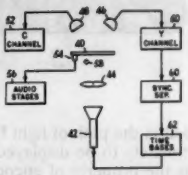
Apparatus for extending the range of use of a television message system of the type wherein auxiliary message signals are multiplexed with regular program signals during the vertical blanking interval thereof, at a rate of one signal line per message per field of program information. Coding arrangements assign to each transmitted message a code signal of predetermined frequency and a predetermined time within the vertical blanking interval in which the message signals are to be inserted, and further condition selective recording of such auxiliary information upon receipt of message signals having a scheduled frequency and a scheduled interval location.

3,585,291
MAGNETIC RECORDING AND REPRODUCING SYSTEM WITH TAPE-TO-HEAD SPEED CONTROL
Kiyoshi Yamakawa, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Sept. 17, 1968, Ser. No. 760,203
Claims priority, application Japan, Sept. 20, 1967, 42/60369
Int. Cl. G11b *19/28, 5/52;* **H04n** *5/78*
U.S. Cl. 178—6.6 **10 Claims**



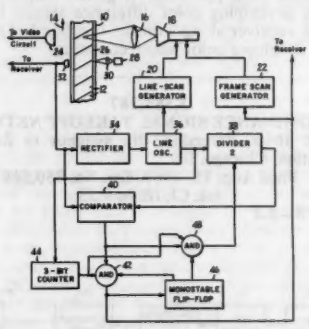
In a magnetic recording and reproducing system in which at least one rotary magnetic head records signals on a magnetic tape in tracks that are skewed or obliquely arranged, the traces of each head are aligned with the recording tracks during playback or reproducing of the recorded signals by generating a reference signal in accordance with the rotational position of the rotary head or heads, envelope-detecting the output of the head or heads, comparing the phases of the envelope-detected output and the reference signal, and, on the basis of such comparison, adjusting the relative position of the tape to the rotary head or heads.

3,585,292
FLYING SPOT SCANNERS SCANNING ALTERNATE FILM FRAMES
Norman Allison Crowder, Wilmette, Ill., assignor to Columbia Broadcasting System, Inc., New York, N.Y.
Filed Jan. 21, 1969, Ser. No. 792,409
Int. Cl. G03b *35/02;* **H04n** *5/86*
U.S. Cl. 178—7.2 **11 Claims**



Continuously moving film having a succession of frames recorded thereon is scanned by a raster of lines moving in the same direction as the film and having a frame scan rate one-half the film frame rate, so that only alternate frames on the film are scanned. Luminance information may be recorded in alternate frames with the corresponding chroma information recorded in the intervening frames; or luminance information about one subject may be recorded in alternate frames with luminance information about another subject recorded in the intervening frames.

3,585,293
SCANNING OF CINEMATOGRAPH FILM
Norman Allison Crowder, Wilmette, Ill., assignor to Columbia Broadcasting System, Inc., New York, N.Y.
Filed Jan. 21, 1969, Ser. No. 792,408
Int. Cl. H04n *5/86*
U.S. Cl. 178—7.2 **10 Claims**



A continuously moving film has recorded thereon a succession of frames and a timing track adapted when scanned to produce a timing signal periodically varying at a frequency in fixed relation to the horizontal line scanning frequency and of one phase during part of each frame scan and of the opposite phase during a succeeding part of the frame scan. The timing signal is converted to a signal at the line scanning rate which is used to synchronize a line scan signal generator and

from which is derived a reference signal at the timing signal frequency and of fixed phase. A comparator compares the timing signal with the reference signal and, when the two are in phase, provides a signal to enable a first gate to pass a synchronizing signal from a counter to a vertical or frame scanning generator to synchronize the same. The synchronizing signal also initiates a flip-flop which disables the first gate and jointly with the comparator enables a second gate a predetermined number of scanning lines after occurrence of the synchronizing signal to pass a signal from the counter to reverse the phase of the reference signal.

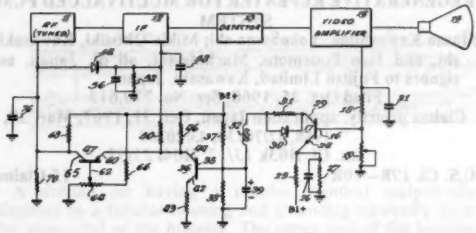
For interlaced scan, there is recorded in the timing track a signal which effects a half line (90°) delay in the timing signal at the beginning of each film frame.

3,585,294

RF AND IF AUTOMATIC GAIN CONTROL CIRCUITRY WITH EXTENDED RANGE IF CONTROL

David O. Lewis, Waukegan, Ill., assignor to Warwick Electronics Inc.

Filed May 9, 1968, Ser. No. 727,913
Int. Cl. H04n *5/52*
U.S. Cl. 178—7.3 **8 Claims**



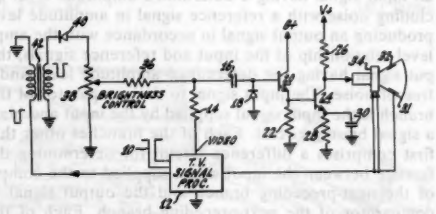
In a signal receiver, an automatic gain control circuit for applying gain control signals to an RF stage and an IF stage which is operative at received signal levels above a predetermined level to connect the RF gain control circuit to the IF stage so that a composite gain control signal is applied to the if stage to extend the range of control therefor.

3,585,295

VIDEO AMPLIFIER

Peter Haferl, Adliswil, Switzerland, assignor to RCA Corporation

Filed Jan. 13, 1969, Ser. No. 790,762
Claims priority, application Great Britain, Aug. 27, 1968, 40980/68
Int. Cl. H04n *5/16*
U.S. Cl. 178—7.3 DC **8 Claims**



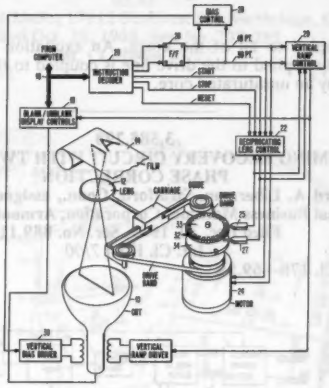
The operating point of a wide band transistor amplifier is established by the charge on a capacitor which couples a source of video signals to the transistor input electrodes. A source of repetitive pulses associated with the video signals is coupled to the amplifier through the capacitor. The pulses are of an amplitude and polarity to cut off the amplifier and to serve as the predominant charging current source for the capacitor. A rectifier is coupled between the transistor input electrodes to serve as a charging path for the capacitor and to provide temperature stabilization of the amplifier during the period between the pulses.

3,585,296

SYNCHRONIZED RECIPROCATING LENS PHOTOCOMPOSER

Van Clifton Martin, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 28, 1969, Ser. No. 871,932
Int. Cl. H04n *1/04*
U.S. Cl. 178—15 **10 Claims**



A photocomposing apparatus forms patterns of images, such as alphameric characters, on a radiation sensitive record receiver or film by directing radiation from a cathode-ray tube screen to the radiation sensitive record receiver. The beam of the cathode-ray tube is controlled so that the beam moves in a single vertical trace, and the beam is blanked or unblanked under control of electrical signals, so that successive scans of radiation from said screen will form a pattern of an image when successive scans move across the film.

A lens or other refractive member in front of the screen directs the radiation to the record receiver and a motor drives the lens at uniform speed to move the successive scans across the record receiver, thus forming the pattern of one or more images across the film.

The sweep of the beam of the cathode-ray tube is altered in length to conform to the size of the images, i.e., characters, and may be of two different lengths, for smaller and larger characters. To avoid pincushion distortion, the trace of the sweep of the beam is centered by biasing the beam in accordance with the length of the sweep.

The speed of the motor is decreased with increase in the length of the sweep of the beam to maintain the same quality of reproduction. At the end of each line, the motor decelerates at a rate to stop the lens in the same position for any speed.

3,585,297

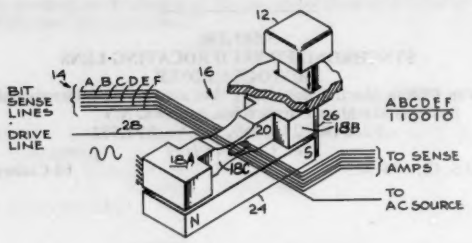
KEYBOARD FOR GENERATING CODED SIGNALS

Thomas Scuitto, Malibu, and Boris Stefanov, Los Angeles, both of, Calif., assignors to Wyle Laboratories, El Segundo, Calif.

Filed June 4, 1968, Ser. No. 734,276
Int. Cl. H04l *15/06*
U.S. Cl. 178—17 **4 Claims**

A keyboard including a plurality of manually actuatable keys each having means associated therewith for producing a set of uniquely coded signals. More particularly, a plurality of ferrite cores are provided each associated with a different one of the keys. Each key carries a permanent magnet which saturates the associated core for so long as the key remains

unactuated. When a key is actuated, its magnet is moved so as to unsaturate the core associated therewith. A set of sense lines is uniquely threaded through each core and a drive line



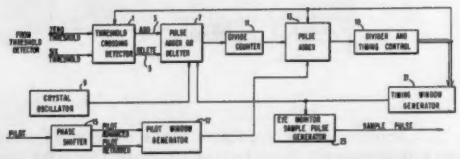
is coupled to all of the cores. An excitation current continually applied to the drive line is coupled to the sense lines only by an unsaturated core.

3,585,298

TIMING RECOVERY CIRCUIT WITH TWO SPEED PHASE CORRECTION

Richard A. Liberman, Stratford, Conn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1969, Ser. No. 889,113
Int. Cl. H04l *7/00*
U.S. Cl. 178—69.5R **4 Claims**



A timing recovery circuit at a receiver provides fine and coarse phase correction in the receiver's local oscillator. The coarse correction adds pulses to the local oscillator's output after it has been divided in frequency whenever the reduced frequency pulses appear outside of a timing window created from a pilot signal sent with the information signal. The fine phase correction adds or deletes pulses in the output of the local oscillator whenever the timing pulses, derived from the output of the coarse phase corrector, do not coincide with data threshold crossings of the information signal. The receiver's timing pulses train is the reduced frequency pulse train resulting from dividing the frequency output of the course phase corrector. The invention herein described was made in the course of Air Force Contract F30602-67C-0168.

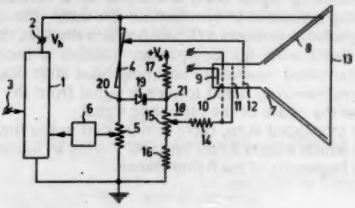
3,585,299

PICTURE DISPLAY ARRANGEMENT PROVIDED WITH A DISPLAY TUBE

Antonius Boekhorst, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 16, 1968, Ser. No. 768,128
Claims priority, application Netherlands, Oct. 28, 1967, 6714686
Int. Cl. H04n *5/44*
U.S. Cl. 178—7.5 **5 Claims**

In a TV display system, a circuit for regulating the voltage at the output terminals of the high voltage supply for the CRT acceleration anode. The circuit includes a VDR and a resistor in series circuit across said output terminals and a voltage divider network connected across a source of DC voltage. A diode is connected between a point on the series circuit and a point on the voltage divider with a polarity and in a manner such that the diode is cut off at the nominal operating voltage at said terminals and is rendered conductive when the voltage increases above a given value. The beam intensity electrode of the CRT is connected to a point on the voltage divider such that conduction of the diode increases the electrode voltage to increase the electron beam intensity thereby increasing the loading effect on the high voltage supply.

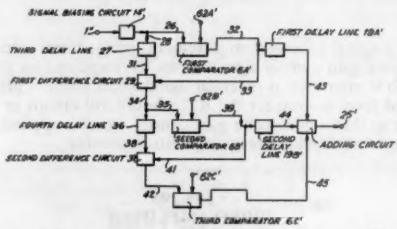


3,585,300

REGENERATIVE REPEATER FOR MULTIVALUED PCM SYSTEM

Masao Kawashima, Yokohama-shi; Mikio Ohtsuki, Kawasaki-shi, and Isao Fudemoto, Machida-shi, all of, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 25, 1968, Ser. No. 770,613
Claims priority, application Japan, Oct. 31, 1967, Mar. 28, 1968, 42/70134; 43/20269
Int. Cl. H03k *13/17;* **H04l** *25/52*
U.S. Cl. 178—70R **15 Claims**



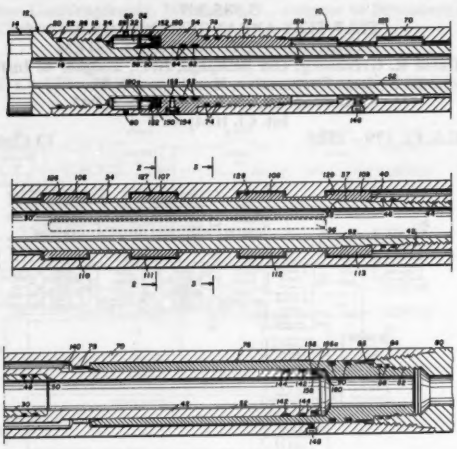
A regenerative repeater for a multivalued PCM system which transmits a multinary code having n signal amplitude levels comprises m comparator branches having m reference amplitude levels, wherein $2^{m-1} < n \leq 2^m$.

A comparator branch includes a comparator for comparing an input signal having a determined amplitude level and including noise with a reference signal in amplitude level and producing an output signal in accordance with the amplitude level relationship of the input and reference signals, the output signal having the determined amplitude level and being free of noise. The input signal to the comparator of the first branch is the input signal supplied by the input and biased by a signal biasing circuit. Each of the branches other than the first comprises a difference circuit for determining the difference between the input signal supplied to the comparator of the next-preceding branch and the output signal of the comparator of the next-preceding branch. Each of the difference circuits has an output connected to the comparator of the corresponding branch. An adding circuit has a plurality of inputs each coupled to the comparator of a corresponding one of the branches and an output providing the output signal. An attenuator is connected in each input of the adding circuit other than the first for attenuating signals supplied to the adding circuit by $\frac{1}{2^x}$, where x is an integer which is 1 in the second branch and increases by 1 in each succeeding branch.

3,585,301
SAND WIPER RING FOR DOWNHOLE TOOL

James L. Newman, 1321 Glen Cove, Richardson, Tex.

Continuation-in-part of application Ser. No. 488,333, Sept. 20, 1965, now Patent No. 3371730, dated Mar. 5, 1968. This application Mar. 4, 1968, Ser. No. 710,089
Int. Cl. E21b *1/10*
U.S. Cl. 175—300 15 Claims

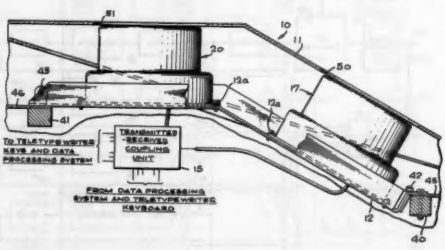


A drilling jar having a tubular mandrel reciprocally disposed in a tubular housing and extending upwardly from the upper end of the housing. The upper end of the housing includes O-ring fluid seals located between the housing and the mandrel. The upper end of the housing forms an upwardly facing lower impact surface which abuts a downwardly facing upper impact surface around the mandrel. A wiping ring is anchored within the housing and extends upwardly within and beyond the lower impact surface into peripheral wiping contact with the mandrel at a point above the impact surface. A downwardly facing groove is formed within the upper impact surface to receive the upper end of the wiper ring when the two impact surfaces are in contact. The upper end of the housing slopes downwardly and outwardly from just below the upper end of the wiping ring to the interior edge of the lower impact surface.

3,585,302
ACOUSTIC COUPLER

William O. Swan, Jr., Sunnyvale, Calif., assignor to Anderson-Jacobson Inc., Mountain View, Calif.

Filed Feb. 17, 1969, Ser. No. 799,822
Int. Cl. H04m *1/00*
U.S. Cl. 179—1C 10 Claims

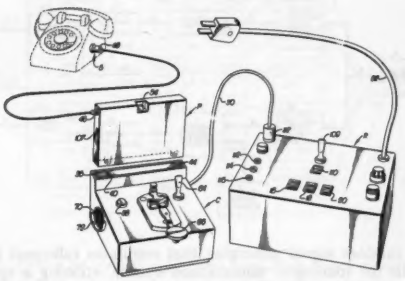

TO TELETYPEWRITER KEYS AND DATA PROCESSING SYSTEM
TRANSMITTED - RECEIVED COUPLING UNIT
FROM DATA PROCESSING SYSTEM AND TELETYPEWRITER KEYBOARD

Apparatus is disclosed for acoustically coupling a telephone to a data terminal for the purpose of transmitting or receiving messages, where the telephone handset is placed on a bracket mounted directly on the chassis of the terminal. Isolation of transmitting and receiving acoustic links is provided by a pair of resilient cups, one for each link. The inside contour of each cup is adapted to provide a supporting annular ledge for one end of the telephone and an airtight seal over the transducer thereof. An annular recess below the ledge is formed to receive and tightly hold a flange of a receiving or transmitting transducer. Each cup is mounted on the bracket by a resilient flange. The flange is connected to the cup by a sleeve which is turned in at the top to form an inverted auxiliary cup with the base of the main cup protruding through the bottom of the auxiliary cup. In that manner, virtually complete acoustic isolation is provided by the cup from the surrounding air and bracket.

3,585,303
TELEPHONE COMMUNICATION SYSTEM FOR THE DEAF

Alexander B. Chieffo, 17912 Sunburst St., Northridge, Calif.

Filed Oct. 21, 1968, Ser. No. 779,295
Int. Cl. H04m *11/02*
U.S. Cl. 179—1 6 Claims

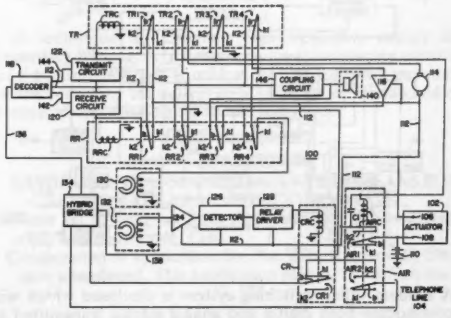


The instrument described herein makes it possible for deaf persons to make telephone calls to, and to receive telephone calls from, other deaf persons and to enable speaking and nonspeaking deaf persons to make telephone calls to, and to receive telephone calls from hearing persons. The usual call signal or ring is transformed into a signal cognizable by the deaf, such as blinking light flashes. Voiced sounds are transformed into lights whereby the deaf person can receive information from speech. A telegraph key produces light signals for communication between the deaf.

3,585,304
AUTOMATIC EMERGENCY COMMUNICATION SYSTEM

Steven M. Gray, 6815 Edgewater Drive, Coral Gables, Fla.

Filed May 16, 1969, Ser. No. 825,139
Int. Cl. H04m *11/04*
U.S. Cl. 179—5 34 Claims



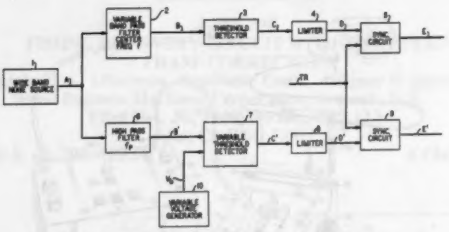
An automatic emergency communication system including a central control station connected with a plurality of sub-

scriber stations through a conventional telephone system. Each of the subscriber stations includes an actuator responsive to a predetermined condition for energizing a tape deck to supply signals corresponding to the telephone number of the central control station to a telephone line and to supply a message to the telephone line, and circuitry responsive to control signals from the central control station to place the subscriber stations in a transmit mode whereby sounds at the subscriber stations are transmitted to the central control station and a receive mode whereby messages from the central control station are received by the subscriber stations.

3,585,305
RANDOM SIGNAL GENERATOR

Robert E. LaMarche, Atlantic Highlands, and Lloyd Ottesen, Fairhaven, both of, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 8, 1969, Ser. No. 823,118
Int. Cl. H03k *5/00*
U.S. Cl. 179—1SA **15 Claims**

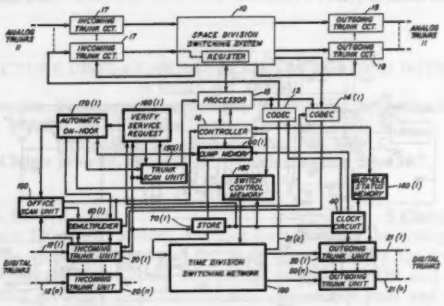


A random signal generator that simulates talkspurt input signals for loading a transmission system utilizing a speech detector is disclosed. The generator converts the output of a wideband noise source into two pulse trains, each of which is synchronized with the time slots of the speech detector utilized by the system under test. One pulse train consists of random fixed duration pulses and the other consists of random pulses whose durations vary randomly.

3,585,306
TANDEM OFFICE TIME DIVISION SWITCHING SYSTEM

Frank E. Battoclett, Columbus; Clarence H. Dagnall, Jr., Westerville, Ohio, and Stephan A. Sheldahl, Littleton, Colombia, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 16, 1968, Ser. No. 729,801
Int. Cl. H04j *3/00*
U.S. Cl. 179—15 **13 Claims**

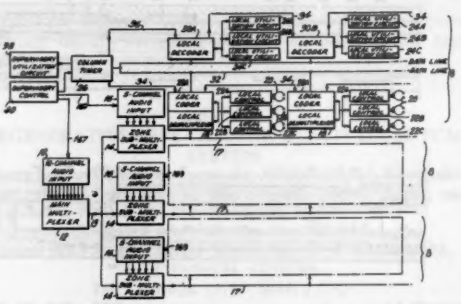


A tandem office switching system is disclosed which will accommodate both digital and analog signals transmitted in single or multiplexed message form. A space division system switches analog signals received in serial single message form and a time division system switches digital signals received in multiplex message form. All signals received in the time division system are processed in accordance with timing derived from the incoming digital signals while signals transmitted from the time division system are processed in accordance with the tandem office timing. The system permits the switching of incoming analog signals to outgoing digital trunks and incoming digital signals to outgoing analog trunks through both space and time division systems.

3,585,307
SELF-TEST ARRANGEMENT FOR AN ENTERTAINMENT-SERVICE SYSTEM

David R. Greenberg, Old Bethpage, N.Y., assignor to Instrument Systems Corporation, Huntington, N.Y.

Filed Feb. 20, 1969, Ser. No. 800,941
Int. Cl. H04j *3/14*
U.S. Cl. 179—15BF **13 Claims**

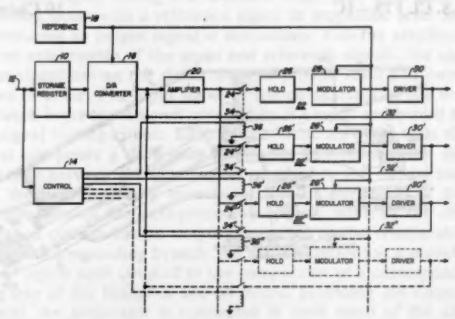


In an entertainment-service system for permitting each of a plurality of local stations to select one or more of a plurality of channels of audio signals and to control one or more utilization circuits associated with each local station or group of such stations through the application of multiplexing techniques, the improvement consisting of a self-test arrangement whereby a test signal of predetermined characteristics is applied to each input channel of the multiplexing means and a self-test circuit means is provided at each station to detect said test signal and to override the control for said utilization circuit to activate said utilization circuit in a unique mode.

3,585,308
MULTIPLEX CONVERTER SYSTEM

Herbert Edward Miller, Brookline, Mass., assignor to Epsco Incorporated, Westwood, Mass.

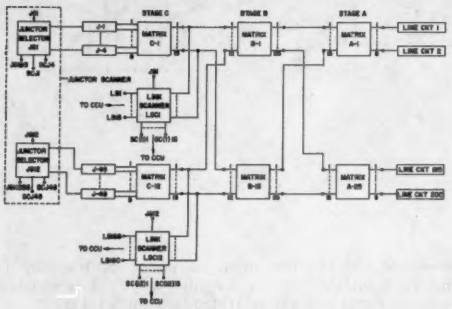
Filed Dec. 19, 1968, Ser. No. 785,284
Int. Cl. H04j *3/00*
U.S. Cl. 179—15 **9 Claims**



A multiplex converter system for continuously, selectively updating information in a plurality of analog output channels

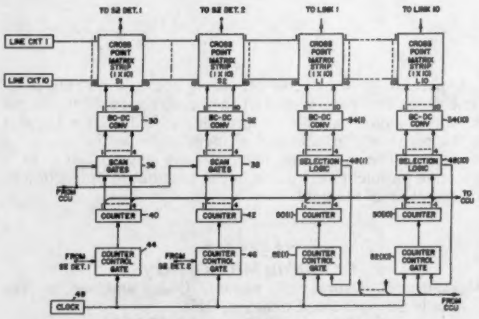
by means of a single input channel by converting an input signal from the input channel to a first analog signal and storing it in a particular one of the channels to provide a second analog signal output from that channel which is a replica of the first analog signal, while the other channels are similarly updated by other input signals supplied by the input channel.

3,585,309
CROSSPOINT NETWORK PATH FINDING SYSTEM
Klaus Gueldenpfennig, Monroe, N.Y., assignor to Stromberg-Carlson Corporation
Filed Dec. 9, 1968, Ser. No. 782,078
Int. Cl. H04q *3/56*
U.S. Cl. 179—18 **7 Claims**



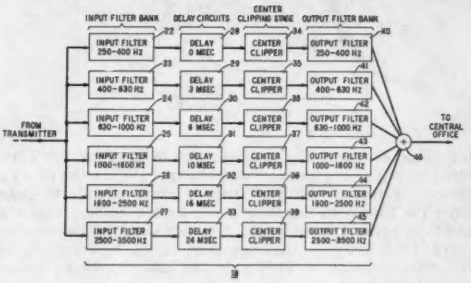
A path finding system for a telephone switching system having a plurality of reed relay matrix stages is described. Different groups of junctors are connected to different matrices of the stage at one end of the system, while different matrices of the stage at the opposite end of the system are connected to line circuits. Links are established through the stage at the junctor end of the system by connecting a free junctor to its associated matrix and then scanning the matrix associated with the free junctor to rapidly select a free link therein. Connections are then automatically extended through the remaining stages to the line circuit of the subscriber with respect to which communication services are desired.

3,585,310
TELEPHONE SWITCHING SYSTEM
Klaus Gueldenpfennig, Rochester, N.Y., assignor to Stromberg-Carlson Corporation
Filed Dec. 23, 1968, Ser. No. 785,896
Int. Cl. H04q *3/42*
U.S. Cl. 179—18 **16 Claims**



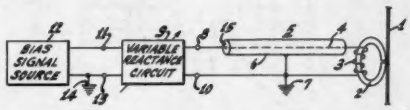
A telephone switching system is described which has at least one cross-point matrix strip for each link. The matrix strip includes a group of cross-point switches each of which is associated with a different line and any of which can be connected to the link. The cross-point switches which are operated are selected by means of counters which also provide link memory. The counters for the selected links are advanced to counts corresponding to a desired line. The selected cross-point switch is operated by transferring the count in the counter to the matrix strips. The matrix strip are arranged in groups such that the lines can be connected to selected links by selected control of the counters.

3,585,311
SPEECH PROCESSOR USING CONTIGUOUS MULTIBAND CENTER-CLIPPING
David A. Berkley, Red Bank, and Olga M. M. Mitchell, Summit, both of, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Sept. 2, 1969, Ser. No. 854,457
Int. Cl. H04m *9/08*
U.S. Cl. 179—170.2 **15 Claims**



The effect of circuit echo and long-time room reverberation in telephonic links are reduced by contiguous band filtering of the signal followed by center clipping of the filter outputs. Distortion products of the clippers are removed in a second filtering stage. A two-thirds octave filter passband width is advantageous.

3,585,312
SIGNAL TRANSMISSION IN RECORDER SYSTEMS WITH IMPEDANCE TRANSFORMATION
John T. Heizer, Haddonfield, N.J., assignor to RCA Corporation
Filed Dec. 31, 1968, Ser. No. 788,279
Int. Cl. G11b *5/44*
U.S. Cl. 179—100.2 **10 Claims**

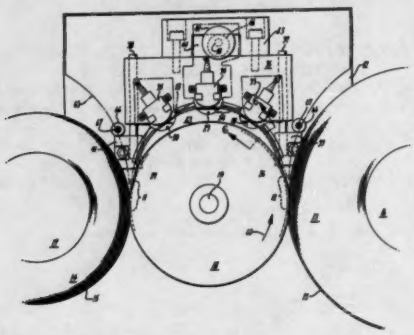


A technique for coupling high frequency energy to a recording transducer. The impedance transforming capability of a transmission line is utilized to transform the impedance of the recording transducer to a value which is matched to a source of operating signal for the transducer.

3,585,313
GUIDE AND TRANSDUCER MOUNTING MEANS FOR TAPE TRANSPORT SYSTEM
Chester W. Newell, San Jose, Calif., assignor to Newell Industries, Inc., Sunnyvale, Calif.
Continuation of application Ser. No. 680,820, Nov. 6, 1967, now abandoned. This application May 6, 1970, Ser. No. 37,377
Int. Cl. G11b *5/54, 15/32, 15/60*
U.S. Cl. 179—100.2 **1 Claim**

A tape transport employing a capstan in contact with supply and takeup rolls of tape serves to drive the tape from

supply to takeup roll. A crescent-shaped guide element defines a portion of the tape path and pulls a loop of tape from the capstan so as to guide the tape past a plurality of transducers. The guide element contains a plurality of pockets which are spanned by the tape. The transducers are disposed to move into and out of engagement with that portion of the tape spanning an associated one of the pockets of

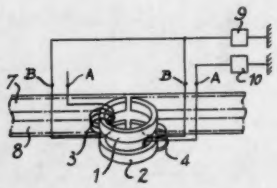


the guide element. The transducers are movable conjointly into and out of engagement with the tape. When the transducers are retracted, the tape can be automatically threaded from the supply to the takeup roll by the guiding action of the tape path. A front guide, together with the transducers, serves to define the outer boundary of the tape path facing the inner boundary as defined by the tape supporting surface of the guide element.

3,585,314
FACILITY FOR COMPENSATING CROSS-TALK IN MULTITRACK MAGNETIC HEADS

Tadeusz Korn, Brussels, Belgium, assignor to Staar Societe Anonyme, Brussels, Belgium

Filed Oct. 9, 1968, Ser. No. 766,081
Claims priority, application Belgium, Oct. 9, 1967, 704863
Int. Cl. G11b *5/44, 5/28*
U.S. Cl. 179—100.2 **6 Claims**



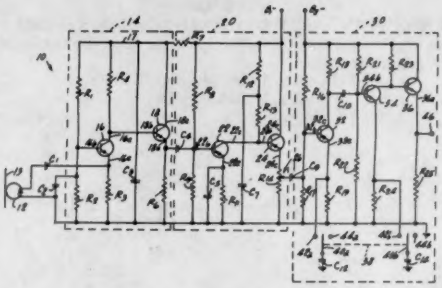
A magnetic tape reading facility for compensating crosstalk between tracks including a switch arrangement for selectively coupling impedances to the reading heads and coils to generate voltages equal and opposite to the crosstalk voltages.

3,585,315
VIDEO PLAYBACK AMPLIFIER WITH FREQUENCY COMPENSATION

Theodore R. Shaifer, Chicago, Ill., assignor to IIT Research Institute, Chicago, Ill.

Filed Sept. 22, 1967, Ser. No. 669,785
Int. Cl. G11b *5/44*
U.S. Cl. 179—100.2 **1 Claim**

A video playback amplifier with frequency compensation, employing a transistor amplifier having a relatively low input impedance, for example, wherein the input transistor of said amplifier is in common-base configuration, and an inductive transducer having a relatively low impedance operatively connected to said amplifier with the impedance of the transducer differing from that of the amplifier input by an amount and in such direction that the inductive reactance of the

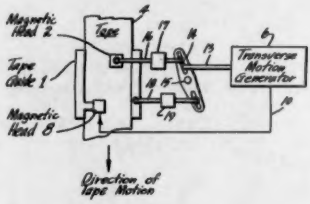


transducer and the low input resistance of the amplifier produce a current into the amplifier which is substantially constant over at least the midvideo frequency range.

3,585,316
LOW-SPEED HIGH-FREQUENCY TAPE RECORDER WITH RECIPROCATING HEAD AND MEDIUM

K. Karl Kuller, West Milford Township, N.J.

Filed June 10, 1969, Ser. No. 831,947
Int. Cl. G11b *5/52, 21/04*
U.S. Cl. 179—100.2T **2 Claims**



Apparatus for transverse recording across a moving magnetic tape. The tape is moved in the direction of its length through a guide which is reciprocated in a direction parallel to the plane of the tape and perpendicular to the length of the tape. The magnetic head is also reciprocated in a direction parallel to the plane of the tape but in opposition to the direction of the guide.

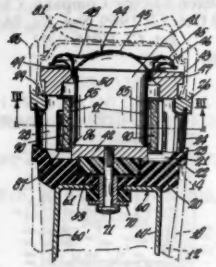
3,585,317
CARDIOID MICROPHONE

Alexander L. Dvorsky, Conneaut, Ohio, assignor to The Astatic Corporation, Conneaut, Ohio

Filed Jan. 4, 1968, Ser. No. 695,613
Int. Cl. H04r *1/38*
U.S. Cl. 179—121D **7 Claims**

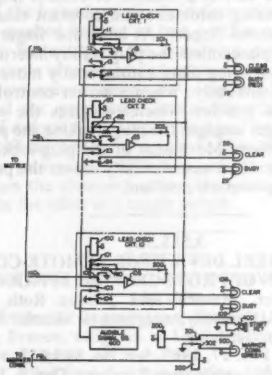
Directional (cardioid) response is achieved by acoustical phase shift through porous plates and slots which are adjusta-

ble. Rubber vibration isolator means adjustably secures the transducer in the housing. A multipath acoustical system,



combined with a high-compliance diaphragm, insures improved response and greater discrimination over a wide frequency range.

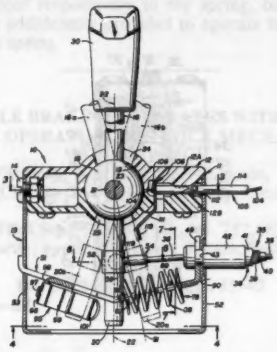
3,585,318
MATRIX CARD TEST CIRCUIT
Siegfried H. Fuchs, Chicago, Ill., assignor to GTE Automatic Laboratories Incorporated, Northlake, Ill.
Filed July 25, 1969, Ser. No. 845,009
Int. Cl. H04m *3/22*
U.S. Cl. 179—175.2C **9 Claims**



A circuit arrangement to be connected to a telephone system card mounted cross-point matrix for the purpose of determining if the cross-points in the matrix are in use, prior to removing the card for servicing. The included circuitry gives indications of the status of the cross-points being tested and prevents idle cross-points or cross-points that go from a busy to idle condition from being seized for further usage in the telephone system.

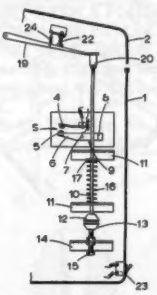
3,585,319
SINGLE LEVER CONTROL
Frank S. Payerle, Akron, and Richard M. Moser, Stow, both of, Ohio, assignors to North American Rockwell Corporation, Pittsburgh, Pa.
Filed Aug. 5, 1969, Ser. No. 847,661
Int. Cl. H01h *21/24*
U.S. Cl. 200—6 A **7 Claims**

A single lever control unit for regulating a plurality of remote, servient mechanisms. At least two motion transmitting mechanisms in the nature of push-pull control cables are individually, and selectively, operated by a single control lever pivotally, and rotatably, mounted in the unit to regulate at least two, remote, servient mechanisms. The control unit has first and second throw arms that are oriented transversely with respect to each other and so mounted that each is selectively rotatable about the axis of the other by manipulation of the lever. The core of one push-pull cable is attached to the first throw arm for actuation by rotation of the first throw arm about the axis of the second throw arm, and the core of



another push-pull cable is attached to the second throw arm for actuation by rotation of the second throw arm about the axis of the first throw arm. A plurality of switch means are mounted in the unit to be actuated in response to selected rotations of the throw arms to regulate a third, remote, servient mechanism.

3,585,320
IMPROVED ELECTRIC SWITCH CONTROL DEVICE ACTUATING MEANS WITH SUCTION CUP TIME RETARDATION HOLDING MEANS AND WEIGHT BIASSED MOVABLE CONTACT MEMBER
Arthur Goldstein, Cambridge, England, assignor to Warmex Limited and Arthur Goldstein
Filed Aug. 8, 1969, Ser. No. 848,531
Claims priority, application Great Britain, Aug. 20, 1968, 39783/68
Int. Cl. H01h *43/00, 7/08;* **F16b** *47/00*
U.S. Cl. 200—33 **4 Claims**



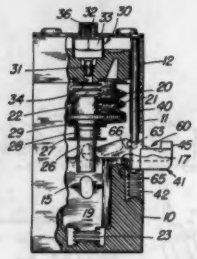
This specification discloses an electric switch control device having a pivotably mounted switch arm and means for biassing the switch arm to a switch-closing position. An actuator rod supports a control member which is engageable and disengageable with the switch arm. When the control member is engaged with the switch arm, a switch-closing position of the arm is prevented. The actuator rod is provided with a suction cup which engages with a second suction cup when the actuator rod is in a position to disengage the control member from the pivotable switch arm. The actuator rod is thus held in that position until entry of air between the suction cups separates them, whence a return spring acts to return the actuator rod to its normal position.

3,585,321

PNEUMATIC TIME DELAY SWITCH WITH IMPROVED AUXILIARY MANUAL SWITCH ACTUATOR MEANS

John J. Dennison, Southington, Conn., assignor to Arrow-Hart, Inc., Hartford, Conn.

Filed May 23, 1969, Ser. No. 827,363
Int. Cl. H01h 7/03
U.S. Cl. 200—34 4 Claims



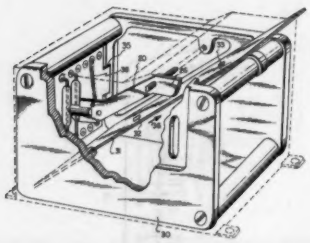
An electrical switch includes a pneumatic time delay mechanism to provide a delay between release of the actuator and return of the contacts to their initial condition. A pivoted lever member associated with the actuator energizes the pneumatic mechanism and initiates the delay function upon release of the actuator.

3,585,322

DIGITALLY OPERABLE MAGNETIC REED SWITCHES

John Paul Jones, Jr., Wayne, Pa., assignor to Navigation Computer Corporation, Norristown, Pa.

Filed Oct. 17, 1968, Ser. No. 768,233
Int. Cl. H01h 43/08
U.S. Cl. 200—46 2 Claims



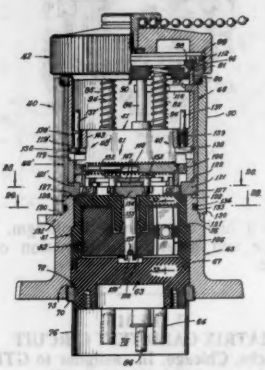
A magnetic reed switch is operated in a digital switching mode with one state established by positioning a magnet at a stable position which holds the contacts open by passing equal magnetic flux components through the two reeds in opposite sense from one pole face of a longitudinal permanent magnet positioned adjacent the overlap region of the reeds. As the magnet is moved slightly from its stable position the switch contacts close. In one embodiment holes in punched card documents are used to move the magnetic field enough to produce on-off digital switching signals. In such applications mechanical linkages provide amplification of movements to assure a digital switching action by moving the magnetic field between two defined stable states.

3,585,323

ELECTRICAL CONNECTOR ASSEMBLY

Arthur I. Appleton, Northbrook; Namik O. Atakkaan, Buffalo Grove, and Duncan Turner, Jr., Desplaines, all of, Ill., assignors to Appleton Electric Company, Chicago, Ill.

Filed Oct. 13, 1969, Ser. No. 865,551
Int. Cl. H01h 9/02
U.S. Cl. 200—50B 6 Claims



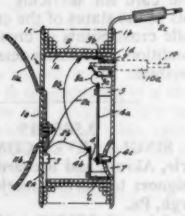
An electrical receptacle and plug having means for automatically deenergizing the receptacle front whenever the plug is partially or wholly withdrawn therefrom. A one-piece coordinating plate carries a number of control fingers fixed thereon, thus assuring automatic and constant relative positioning of the control fingers. At least one finger prevents movement of the plate unless the plug is fully inserted. Movement of the coordinating plate automatically moves all control fingers simultaneously. When a power-control finger is moved towards a position which energizes the receptacle front, another finger engages the plug, locking the plug in the fully-inserted position. Movement of the plug-locking finger to the unlocked position automatically moves the power-control finger to the power-off position.

3,585,324

SWITCH AND REEL DEVICE FOR REMOTE-CONTROL OPERATION OF PHOTOGRAPHIC APPARATUS

Alfred Renndorfer, Munich, and Johann Roth, Schwabhausen, both of, Germany, assignors to Niezoldi S. Kramer GmbH, Munich, Germany

Filed Feb. 27, 1969, Ser. No. 803,013
Claims priority, application Germany, Dec. 9, 1968, P 16 22 903.1
Int. Cl. H01h 35/00
U.S. Cl. 200—52 16 Claims



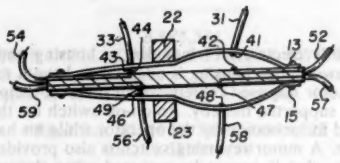
A reel which is connected with one end of an electric cable and is provided with an electric switch which can be closed by hand to establish an electric connection between the conductors in the cable. The cable can be convoluted on or paid out by the core of the reel and its free end is provided with a plug which can be inserted into the socket of a camera or projector to complete a circuit in such apparatus in response

to closing or opening of the switch. The reel is further formed with a socket which can receive the plug on the cable of a second reel and is connected in parallel with the switch so that an operator can complete an electric circuit which is connected with the plug of the first cable by closing or opening the switch of the second reel.

3,585,325
A SNAP-ACTION SWITCH INCLUDING A LEAF SPRING STRIP REFORMABLE INTO TWO PREDETERMINED POSITIONS

Alfred W. Stewart, 107 Boulevard, Mountain Lakes, N.J. 07046

Filed Feb. 20, 1969, Ser. No. 800,987
Int. Cl. H01h *13/48*
U.S. Cl. 200—67 6 Claims

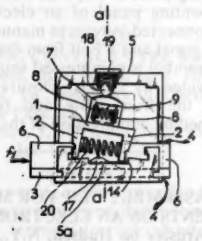


There is provided a novel type of switch comprising essentially one or more tempered, deformable leaf springs rigidly attached at each end thereof to a rigid bar wherein the length of the spring is greater than the length of the bar whereby there is formed a bow in the spring. When a clamping force is applied to the bowed spring, the deformation caused thereby produces marked bowing in one portion of the spring and substantial flattening in the remaining portion. When the clamping force is reversed and applied to the bowed section, a snap-action occurs causing the previously bowed section to flatten and the previously flattened portion to bow. This reversal of deformation is very rapid and can thus be utilized as the on/off mechanism of a switch. This principle is utilized in the two principal modifications of the invention. In one modification the clamping action is applied in the form of a slide and in the other in a toggle switch.

3,585,326
SNAP SWITCH WITH POSITIVE-DRIVE BREAKING ACTION

Fernand Santerre, Orgeval, and Francis Libaud, Nanterre, both of, France, assignors to La Telemecanique Electrique, Nanterre, France

Filed Sept. 8, 1969, Ser. No. 855,923
Claims priority, application France, Sept. 9, 1968, 165522
Int. Cl. H01h *13/28*
U.S. Cl. 200—67A 10 Claims



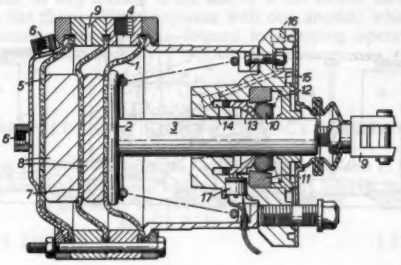
A snap switch capable of unfailingly the fixed open moving contacts disposed opposite fixed contacts.

It includes, in a housing carrying the fixed contacts, a rocking central part carrying the moving contacts and means for restraining it on the housing, a slide which is provided with at least one cam for directly actuating the central part and which extends therethrough, said part being provided with an elastic thrust point and a snap-action contact breaking spring being positioned between the slide and the central part whereby to cause operation of the slide cam on the central part whereby to cause operation of the slide cam on the central part to simultaneously arm the spring and raise the central part against the countering action of the elastic thrust point followed by sudden release of the central part and tripping thereof responsively to the spring, backup driving means being additionally provided to operate in the event of failure of the spring.

3,585,327
VEHICLE BRAKING APPARATUS WITH FLUID PRESSURE OPERATING AND LOCK MECHANISM FOR MICROSWITCH

George K. Farmery, Scothern, near Lincoln, England, assignor to Clayton Dewandre Company Limited, Lincoln, England

Filed Sept. 5, 1968, Ser. No. 757,687
Claims priority, application Great Britain, Sept. 14, 1967, 41922/67
Int. Cl. B60g *1/44*; H01h *35/40*
U.S. Cl. 200—83 6 Claims

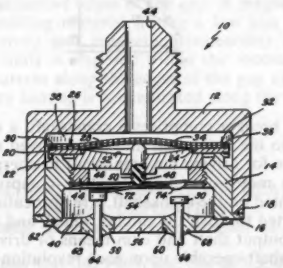


Fluid pressure operated braking apparatus for motor vehicles comprises a lock actuator associated with a brake chamber thereof and switch mechanism operable upon movement of the actuator to the locking condition to close the circuit to visible or audible signal ro alarm devices.

3,585,328
PRESSURE SWITCH WITH A PLURALITY OF SNAP ACTING METAL DIAPHRAGMS COATED WITH METALLIC OXIDE

Peter O. Fiore, Cumberland, R.I., and Robert Baboian, North Attleboro, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 11, 1970, Ser. No. 10,554
Int. Cl. H01h *35/34*
U.S. Cl. 200—83B 6 Claims



Plural snap-acting, pressure-responsive, metal diaphragms having dished portions which permit the diaphragms to move from one dished configuration to an inverted dished configu-

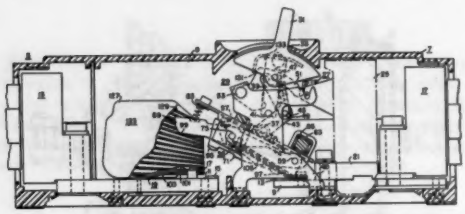
ration with snap action are disposed in nested relation to each other in a pressure switch. When fluid pressures are applied to the nested diaphragms from one side thereof, the diaphragms retain their original dished configuration during variation of said fluid pressures over a selected pressure range. However, the diaphragms move together with snap action to their inverted dished configuration when said fluid pressures reach predetermined levels. The diaphragms have protective oxide surface coatings which prevent galling of one diaphragm by another during said snap-acting movement of the nested diaphragms whereby the diaphragms retain their pressure response characteristics over a long service life.

3,585,329

CIRCUIT INTERRUPTER WITH IMPROVED CONTACT STRUCTURE AND ARC-RUNNER

Eugene J. Walker; James P. Ellsworth, Beaver, and Alfred E. Maier, Beaver Falls, all of, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 24, 1968, Ser. No. 700,251
Int. Cl. H01h *33/12*
U.S. Cl. 200—146 **17 Claims**



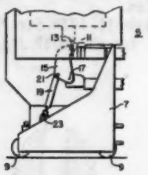
A circuit breaker comprises an improved arcing-contact and arc-runner contact structure with a resiliently mounted construction.

3,585,330

MOTOR-OPERATED SPRING-CLOSING CIRCUIT BREAKER

Fred Bould, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 25, 1969, Ser. No. 836,313
Int. Cl. H01h *3/26*
U.S. Cl. 200—153SC **10 Claims**



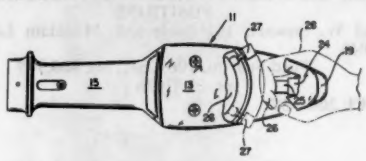
A circuit breaker comprises a crankshaft, a closing spring connected to the crankshaft and an improved motor-operating structure for driving the crankshaft to charge the closing spring. The motor-operating structure comprises a ratchet wheel mounted on the crankshaft, a reciprocating pawl structure supported to drive the ratchet wheel, and a motor comprising an output shaft and cam means or driving means on the output shaft operable upon each revolution of the output shaft to operate the pawl structure to advance the ratchet wheel to thereby charge the closing spring. The motor is positioned alongside the closing spring with the axis of the output shaft thereof normal to a plane in which the axis of the crankshaft is located.

3,585,331

HOUSING AND SWITCH FOR PORTABLE ELECTRIC DEVICE

Thaddeus E. Bednarski, Timonium; Lewis H. Rohr, Baltimore, and Robert D. Harris, Baltimore, all of, Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.

Filed Sept. 29, 1969, Ser. No. 861,715
Int. Cl. H01h *21/10*
U.S. Cl. 200—157 **5 Claims**



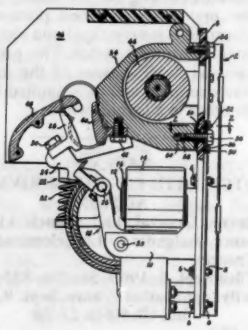
A portable electric tool including a housing and handle rigid therewith. The housing is adapted to have a reversible electric motor disposed therein which drives a reciprocating saw blade supported thereby. An on-off switch for the motor is disposed for actuation by the operator while his hand is on the handle. A motor reversing switch is also provided and is disposed so that it cannot be actuated when the operator's hand is in place on the on-off switch.

3,585,332

CONTACT BOUNCE MITIGATOR

Jerome F. Dries, Waukesha, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Nov. 20, 1969, Ser. No. 878,357
Int. Cl. H01h *1/50*
U.S. Cl. 200—166 **5 Claims**



A beveled spring plate is disposed between the stationary contact and mounting panel of an electrical contactor. A similar plate is connected in reverse manner between the rear of the mounting panel and a bolt from the stationary contact member. The assembly is compressed snugly by the bolt. Impact forces provided by contact closure are dampened by compression of the front plate and rebound forces are similarly dampened by compression of the rear plate.

3,585,333

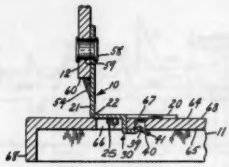
RAPID ASSEMBLY CLIP FOR MOUNTING COMPONENTS ON AN ELECTRONIC CHASSIS

Louis J. Valle, Ardsley on Hudson, N.Y., and Otto Hoegerl, Saegerstown, Pa., assignors to National Tel-Tronics Corporation, Yonkers, N.Y.

Filed June 30, 1969, Ser. No. 837,484
Int. Cl. H01h *9/02*
U.S. Cl. 200—168 **4 Claims**

A stamped resilient clip for mounting planar electronic components at an angle with respect to the principal horizon-

tal plane of an electronic chassis. The clip includes a base wall having a resilient tab selectively projectable through a first opening in said chassis, and resiliently engaging a second adjacent opening therein, and a second wall angularly disposed with respect to said first wall upon which the component is mounted.

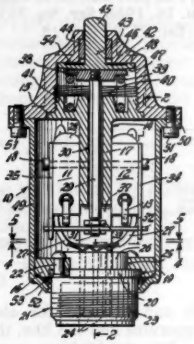


3,585,334

POSITION INDICATING ELECTRICAL SWITCH UNIT

Robert R. Hellman, Bridgeport, Conn., assignor to Westport Development & Manufacturing Company, Inc., Milford, Conn.

Filed Dec. 22, 1969, Ser. No. 886,828
Int. Cl. H10h *9/04*
U.S. Cl. 200—168 **8 Claims**



A mechanically operated switch unit having an electrical snap action switch in which the switching is effected in an hermetically sealed atmosphere but yet the unit has a removable cover to enable adjustment and/or repair in the field. The switch is protected from excessive movement which could destroy it by having the actuator movement structurally limited and by operating the switch inversely so that it is normally closed when not actuated, the latter also making the unit essentially free from vibration actuation.

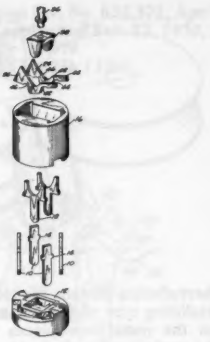
3,585,335

ROCKING CONTACT TYPE SWITCH

Donald J. Bulgarelli, Havertown, and Daniel E. McNeil, Bromall, both of, Pa., assignors to Controls Company of America, Melrose Park, Ill.

Filed Nov. 3, 1969, Ser. No. 873,612
Int. Cl. H01h *13/28*
U.S. Cl. 200—67G **3 Claims**

The telescopic lever carries a spring loaded cam follower bearing against a cam contoured flipper blade pivotally supported in a center terminal to rock about a pivot point to contact an adjacent stationary contact. The contoured cam surface of the flipper blade combined with the pivot action and the direction of force application by the spring loaded follower acts to give the desired action to the toggle switch (momentary or sustained). All terminals and the flipper are stamped flat pieces which easily assemble into the base with great accuracy and low cost. Simple substitution of parts will change the characteristics of the switch while ensuring use of many common parts. A simple change can apply the concept to single pole or double pole operation. The toggle can be two or three position. Simple changes allow ten different switches. A key feature is the use of a flat center terminal and a flat flipper blade coplanar with one another whereby all necessary contours are formed in stamping operations with resultant accuracy.

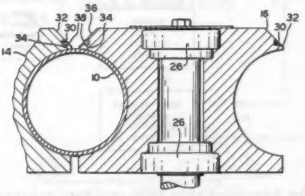


3,585,336

SEAM WELDING BY HIGH FREQUENCY RESISTANCE HEATING

William P. Suckow, Portland, Oreg., assignor to John E. Beall and G. Franklin Beall, Portland, Oreg., part interest to each

Filed Mar. 12, 1969, Ser. No. 806,438
Int. Cl. B23k *31/06*
U.S. Cl. 219—59 **1 Claim**



Apparatus for welding together the edges of a longitudinal gap in metal tubing by high frequency resistance heating including a pair of rollers mounted respectively to contact the tubing at opposite sides of the gap and at a position substantially at the welding point. Each of the rollers has an annular recess formed therein in such a manner that rotation of the rollers as the tubing is advanced causes a portion of the recesses to come into close predetermined spaced relationship to the respective edges of the gap. A magnetic but substantially insulating material having a low loss factor, high volume resistivity and magnetic permeability substantially greater than unity is disposed within the recesses such that the flow of current along the edges of the gap caused by the high frequency heating is concentrated along the edges of the gap.

3,585,337

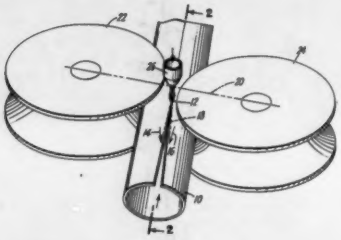
FORGE WELDING BY HI-FREQUENCY HEATING AND METAL DEPOSITION

Wallace C. Rudd, Larchmont, N.Y., assignor to AMF Incorporated

Filed May 26, 1969, Ser. No. 827,530
Int. Cl. B23k *31/06*
U.S. Cl. 219—67 **9 Claims**

Metal workpieces that are to be joined by welding are brought to or near forge welding temperature by a first heating means such as a high frequency resistance heating means

or a high frequency induction heating means. At the same time that the workpieces are being heated to their desired temperature by the first heating means or at a short interval of time thereafter, a stream of hot molten metal droplets from a metallizing type of gun means is directed to and impinges upon the metal workpieces and amount of molten metal of the workpieces in the weld area.

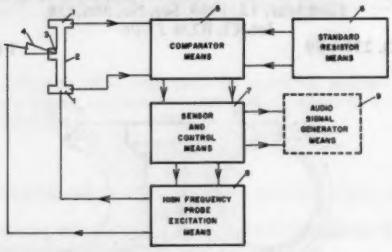


3,585,338

THIN FILM HYBRID CIRCUIT RESISTOR TRIMMER

Edward Daniel Rosenthal, Laval, Quebec, and Samuel Graham, Montreal, Quebec, both of, Canada, assignors to Canadian Marconi Company, Montreal, Quebec, Canada

Filed Mar. 21, 1969, Ser. No. 809,073
Claims priority, application Canada, May 29, 1968, 021268
Int. Cl. B23k *11/22*
U.S. Cl. 219—68 **1 Claim**



Process for trimming thin film resistors comprising applying a probe to the surface of the resistor and moving the probe along said surface, said probe being excited by a high frequency power source. Apparatus for carrying out the process includes the high frequency excitation source.

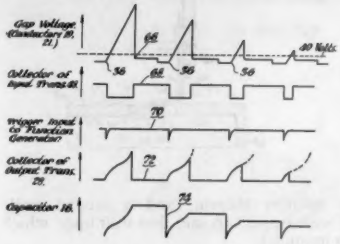
3,585,339

POWER SUPPLY AND ADAPTIVE CONTROL SYSTEM FOR EDM APPARATUS

Terry O. Hockenberry, Pittsburgh, Pa., assignor to Dr. Everard M. Williams, Pittsburgh and Dr. Terry O. Hockenberry, Fox Chapel, Pa., part interest to each

Filed Sept. 16, 1968, Ser. No. 759,833
Int. Cl. B23k *9/16*
U.S. Cl. 219—69 **10 Claims**

A adaptive control system can be used for EDM apparatus having a workpiece and an electrode tool, together with means for establishing repetitive electric discharges across a gap between the tool and said workpiece. The control system comprises reversible drive means for moving the tool toward and away from said workpiece to establish the discharge gap, a first circuit produces a series of control pulses corresponding with each rise in gap voltage preparatory to each gap breakdown and discharge. A second circuit is coupled to the first circuit for producing an output wave form in response to the control pulses and synchronized thereby to the waveform of the gap voltage. A third circuit is coupled to the second circuit and the first circuit intermittently for interrupting the output waveform. The third circuit is conductive during portions of successive cycles of the waveform so that the successive portions are varied in length in proportion to the rises of the gap voltage. A fourth circuit is coupled to the third circuit and to the drive means for converting the waveform portions into an averaged control signal for operating the drive means to control the width of discharge gap.

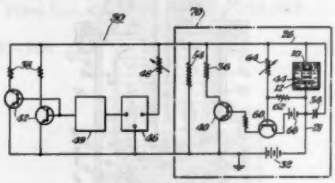

Gap Voltage (Conductors 19, 21)
80 Volts
Collector or Input Trans. 48
Wiper Input to Function Generator 70
Collector or Output Trans. 72
Capacitor 16

3,585,340

ELECTRIC DISCHARGE MACHINING CIRCUIT FOR ELIMINATING CONCENTRATED DISCHARGES

Terry O. Hockenberry, Pittsburgh, Pa., assignor to Dr. Everard M. Williams, Pittsburgh and Dr. Terry O. Hockenberry, Fox Chapel, Pa., part interest to each

Filed Sept. 16, 1968, Ser. No. 762,259
Int. Cl. B23k *9/16*
U.S. Cl. 219—69 **12 Claims**



The power supply can be used for electric discharge machining (EDM) apparatus and the like, the power supply includes a circuit for establishing repetitive electric discharges across a discharge gap forming part of EDM apparatus. A voltage detecting circuit in coupled across the EDM gap for developing an output signal when the instantaneous voltage across the gap falls below a predetermined level. A control circuit is coupled to the detecting circuit and to the supply circuit for momentarily lowering gap discharge rate until the lowest instantaneous voltage is at or above said predetermined level.

3,585,341

STRUCTURE FOR AND METHOD OF ELECTRICAL MACHINING

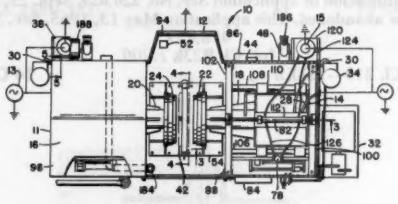
Thomas J. O'Connor, 100 Morgan Rd., Ann Arbor, Mich.

Filed Oct. 18, 1968, Ser. No. 768,697
Int. Cl. B23p *1/00*
U.S. Cl. 219—69 **12 Claims**

A machine tool comprising a large elongated fluid tank, dry chamber boxes at each end of the tank supporting spindles having electrodes secured thereto for reciprocal movement toward and away from a workpiece positioned between the dry chambers in the middle of the fluid tank. Means for moving the dry chamber and the spindle and electrode carried thereby toward and away from the workpiece and for simultaneously rotating the spindles and electrodes. An electrical machining power supply with each spindle at each end of the dielectric tank, servo means for controlling the movement of the spindles and separate fluid supply means for passing fluid through the spindles to the electrodes. Adjusting bolt and abutment structure at one end of the tank for aligning the spindles at the opposite ends of the tank. Structures for hydraulically clamping a workpiece between the elec-

trodes and for levelling a worktable in position beneath the electrodes in the tank.

The method including moving a pair of electrodes toward a workpiece from the opposite sides thereof, maintaining a



predetermined gap between the electrodes and workpiece while simultaneously rotating the electrodes and passing an electric signal between the electrodes and workpiece in the presence of a dielectric or an electrolyte.

3,585,342

EDM ELECTRODE

John C. Kosco, St. Marys, Pa., assignor to Stackpole Carbon Company, St. Marys, Pa.

Filed June 3, 1970, Ser. No. 43,221

Int. Cl. B23k *9/16*

U.S. Cl. 219—69E **3 Claims**

Electrodes for EDM (electric discharge machining) of improved wear performance are provided by consolidated bodies of, by volume, 50 to 90 percent of graphite with the remainder consisting essentially of chromium-iron alloy containing from about one to about 99 volume percent of chromium.

3,585,343

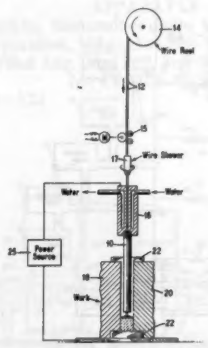
METHOD FOR VERTICAL WELDING OF ALUMINUM

Alfred B. Crichton, Bergenfield, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed May 21, 1970, Ser. No. 39,425

Int. Cl. B23k *9/18, 9/12*

U.S. Cl. 219—73 **7 Claims**



A method for vertical welding of aluminum wherein a cavity is formed between aluminum plates by placing graphite retaining members on the outside surface thereof. At least one consumable guide tube is placed in the cavity and a consumable wire is passed therethrough. A halogen base flux is fed into the cavity to shield the weld puddle and to provide a medium for resistance melting. Voltage is supplied to the wire from about 40 volts and 1300 amps to about 75 volts and 400 amps. When multiple guide tubes and wires are used, the wire is skewed prior to entry into the consumable guide tube and rotated as it emerges therethrough to ensure complete fusion.

3,585,344

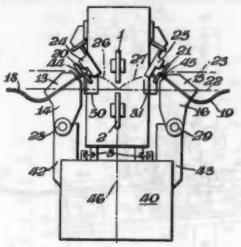
BAND WELDING MACHINE

Hans Heymann, and Hans Rottmann, both of c/o Messer Griesheim GmbH Frankfurt am Main, Hanauer Landstr. 300, Germany

Continuation of application Ser. No. 632,322, Apr. 20, 1967, now abandoned. This application Feb. 12, 1970, Ser. No. 10,979

Int. Cl. B23k *11/06*

U.S. Cl. 219—82 **14 Claims**



Opposite ends of a pair of coils are clamped together by clamping means in the carriage of the band welding machine. The ends are cut during the forward movement of the machine carriage and are welded together during its return or backward movement to join the coils together at the welded seam.

3,585,345

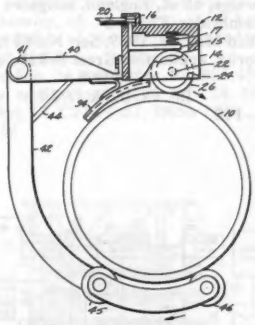
APPARATUS AND METHOD FOR WELDING

Karl G. Jespersen, 1307 11th St., Vienna, W. Va.

Filed Apr. 2, 1969, Ser. No. 812,768

Int. Cl. B23k *11/06*

U.S. Cl. 219—83 **6 Claims**



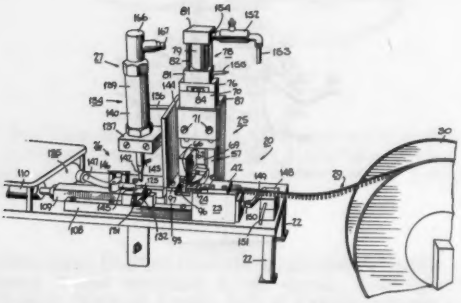
A welding assembly is described as having arm members which will clamp the electrode assembly onto pipe sections or like objects which are to be butt-welded. A performed ring of filler material is provided which conforms to the shape and size of the interface between the sections to be welded. The electrode assembly comprises three rollers one of which abuts the filler ring and the others make contact with the pipe sections. A current path is established between the electrode abutting the filler ring and each of the remaining electrodes through the filler ring and that pipe section with which said one of said other electrodes is in contact. The entire assembly may be readily adjusted to be used with any size pipe merely by adjusting the spread distance between the arm members which clamp the electrode assembly to the pipe.

3,585,346

TERMINAL SOLDERING MACHINE WITH MEANS FOR SEGREGATING SUCCESSIVE TERMINALS FROM A STRIP

David L. Jackson, Doylestown, Pa., assignor to The Thomas & Betts Co., Elizabeth, N.J.

Filed June 26, 1967, Ser. No. 648,673
Int. Cl. B23k 1/04
U.S. Cl. 219—85 11 Claims



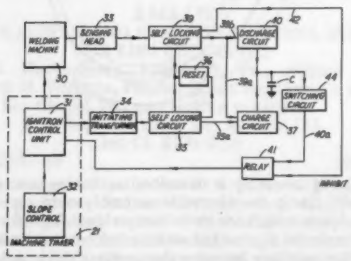
The machine automatically forms a soldered connection between a conductor wire and a terminal severed and conveyed from the supply strip. The machine operation is cyclic beginning with the formation of a connection and ending with the fixed positioning of another terminal at the soldering station. The electrical circuit which is used in forming the soldered connection initiates the pneumatic circuit which is used to sever and position the terminals of the supply strip.

3,585,347

QUALITY CONTROL IN RESISTANCE WELDING

James Christopher Needham, Saffron, Walden, Essex; David Bernard Benton, Cambridge, and Malcolm Douglas Hannah, Cambridge, all of, England, assignors to The Welding Institute, Cambridge, England

Filed Mar. 28, 1969, Ser. No. 811,375
Claims priority, application Great Britain, Apr. 1, 1968, 15580/68
Int. Cl. B23k 11/24
U.S. Cl. 219—110 5 Claims



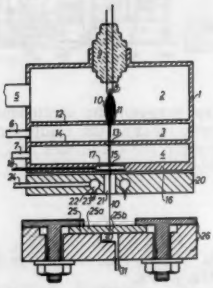
In a resistance welding process, the rate of displacement of a movable electrode, due to expansion of the heated workpieces between the welding electrodes, is measured in a first part of a welding operation and the current flow is then continued after the said first part for a period which is a function of the result of the measurement.

3,585,348

METHOD AND APPARATUS FOR WELDING METALLIC AND NONMETALLIC MATERIALS BY AN ELECTRON BEAM UNDER NORMAL PRESSURE

Horst Eckstein, Grevenbroich, Germany, assignor to W. C. Heraeus GmbH, Hanau, Germany

Continuation of application Ser. No. 226,029, Sept. 25, 1962, now abandoned. This application May 13, 1965, Ser. No. 458,829
Int. Cl. B23k 15/00
U.S. Cl. 219—121EB 14 Claims



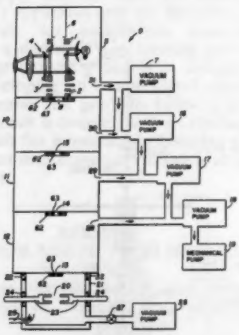
A method and apparatus for electron beam welding metallic or nonmetallic materials under a normal pressure. Inert gas envelopes the beam at the point of beam emission and covers the front, rear, or both sides of the workpiece at the point of beam impingement.

3,585,349

NONVACUUM ENVIRONMENTALLY CONTROLLED ELECTRON BEAM WELDING

David C. Kalbfell, San Diego, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed Apr. 15, 1963, Ser. No. 273,156
Int. Cl. B23k 9/00
U.S. Cl. 219—121EB 12 Claims

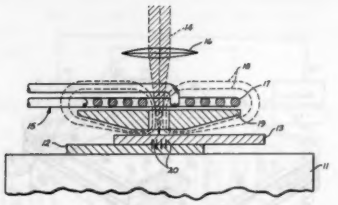


The invention relates to apparatus for bringing an electron beam outside the high vacuum chamber of its electron gun to direct the same onto a workpiece. The apparatus comprises beam aligning means, a visual optical system, at least one buffer vacuum chamber, means for surrounding the beam with a shield gas, and pumping mans individual to each chamber for individual pumping of them. The high vacuum chamber and buffer chamber have pyrex windows disposed within the field of view of the optical system. The high vacuum and buffer chambers also have aligned flow limiting orifices drilled in the said windows for passing the beam from the high vacuum chamber to the workpiece, one of the orifices interconnecting the two chambers and the other orifice being the exit orifice adjacent the workpiece.

3,585,350
METHODS OF AND SYSTEMS FOR JOINING ARTICLES

James E. Voytko, Gahanna, Ohio, assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Nov. 19, 1968, Ser. No. 777,026
Int. Cl. B23k 9/00
U.S. Cl. 219—121 16 Claims



A pulsed, optically pumped laser device is utilized to develop a beam of radiant energy which is concentrated and focused onto areas of juxtaposed articles to be joined. Conventionally, the radiant energy heats the areas of the articles to be joined so that the areas may be joined together. A highly concentrated magnetic field is developed by a magnetic device in the areas to be joined.

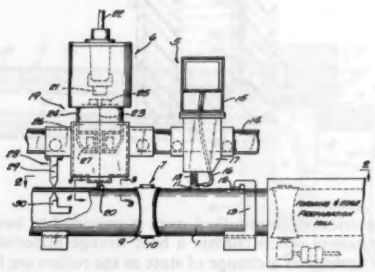
The magnetic field induces a current in the articles placed in this field. The interaction between the high density field and the magnetic field produced by the induced current in the articles produces a force impulse on the articles and facilitates the application of a clamping force upon the articles during the period when the radiant energy of the laser is heating the areas of the articles to be joined. In cases where the articles are nonconductive, a conductive overlay may be utilized to provide the force transmission to the nonconductive articles beneath.

Since high currents are required for a flashing lamp of the laser device and for the magnetic device, the system for joining the articles includes a single current supply source which supplies the same current simultaneously to the flashing lamp and to the magnetic device for effecting the simultaneous heating and clamping of the areas of the articles to be joined.

3,585,351
ELECTRON BEAM WELDING PROCESS AND APPARATUS

John F. Hinrichs, Menomonee Falls, Wis., assignor to A. O. Smith Corporation, Milwaukee, Wis.

Filed Aug. 25, 1969, Ser. No. 852,546
Int. Cl. B23k 15/00
U.S. Cl. 219—121 6 Claims

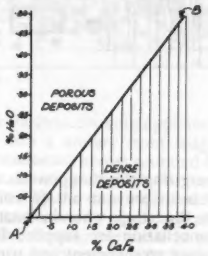


A tubular metal blank having two longitudinally opposed edges welded to form a seam by a process and apparatus therefor including heating the edges to a welding temperature at a first station and pressing the edges together at the first station to initially weld the edges thereof and provide extruded metal outwardly of the seam provided by the weld. Then the weld seam and extruded metal is electron beam welded at a second station with the initial weld being refined by the electron beam welding and undercutting in the weld being prevented by the formation of the extruded metal from the weld area. Additional metal may be added prior to the electron beam welding station to provide additional material at the weld seam to overcome the problem of undercutting.

3,585,352
ARC WELDING PROCESS AND ELECTRODE FOR STAINLESS STEEL

Albert J. Zvanut, Whittier, Calif., assignor to Stoody Company

Continuation-in-part of application Ser. No. 777,405, Nov. 20, 1968, now abandoned. This application Nov. 24, 1969, Ser. No. 879,045
Int. Cl. B23k 9/00
U.S. Cl. 219—137 12 Claims

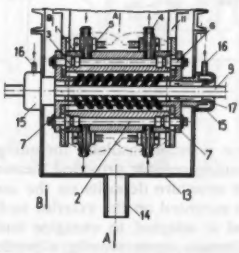


There is disclosed an arc welding process for stainless steel and a flux-cored electrode particularly useful therein. In one embodiment, means are provided for limiting the moisture content of the electrode as applied to the workpiece. In another embodiment the electrode is formulated of components having relatively low moisture absorptivity.

3,585,353
CYLINDRICAL CONTACT ELECTRODE FOR SUPPLYING ELECTRIC CURRENT TO AN ELEMENT—ESPECIALLY PIPES—HEATED BY RESISTANCE HEATING

Kazimierz Markiewicz, ul. K. Miarki 15/2; Leslaw Kus, ul. Dluga 51; Jan Golek, ul. Nowotki 3/5, and Jozef Dudek, ul. Mlynska 12, all of Gliwice, Poland

Filed Feb. 24, 1969, Ser. No. 801,458
Claims priority, application Poland, Feb. 28, 1968, 125503
Int. Cl. C21d 9/62; H05b 1/00
U.S. Cl. 219—155 1 Claim



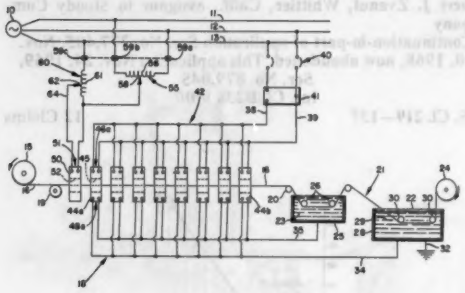
A cylindrical contact electrode for supplying electric current to a cylindrical metal element. Current is conducted through wire brush means extending the length of a plurality of hollow wedge-shaped sections which are positioned relative to one another in cylinder-forming relationship. The sections are provided with openings for the passage of a cooling median along with adjusting means for changing the internal diameter of the electrode and thus the pressure against the heated element.

3,585,354

PHASE SHIFT VOLTAGE CANCELLATION SYSTEM

Clifford F. Taddeo, Moreland Hills, Ohio, assignor to The Trauwood Engineering Company, Cleveland, Ohio

Filed June 19, 1969, Ser. No. 834,808
Int. Cl. C21d 9/62; H05b 1/00
U.S. Cl. 219—155 4 Claims



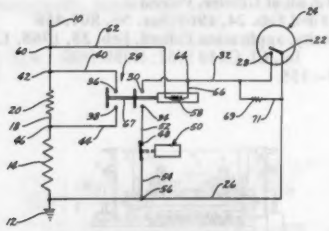
A system for energizing the components of a wire strap heat treating process to prevent unsafe voltage conditions from occurring on the strap wherein heating power and majority voltage cancellation are supplied from a common distributed transformer arrangement and trimming cancellation of voltage is effected in an auxiliary transformer, the latter comprising a phase shift autotransformer arrangement energized from all phases of the three phase power source.

3,585,355

CONTAMINATION RESISTANT INSULATOR

Essam Nasser, Ames, Iowa, assignor to Iowa State University Research Foundation, Ames, Iowa

Filed Dec. 22, 1969, Ser. No. 887,263
Int. Cl. H05b 1/00
U.S. Cl. 219—209 7 Claims



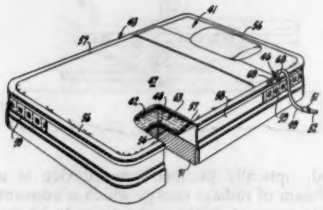
A contamination resistant insulator including an insulative body having a heating resistor provided therein which emits heat to evaporate moisture deposits on the insulator. A humidistat means is mounted on the exterior surface of the insulative body and is adapted to energize and close a coil operated switch means upon sensing a predetermined humidity level. The switch means, upon being activated and closed, short circuits a switching resistor which is series connected to the heating resistor to increase the current flow in the heating resistor to increase the amount of heat generated thereby. A thermocouple is provided in the resistor circuit to deenergize and open the switch means upon the temperature of the insulator reaching a predetermined level. The opening of the switch means causes the current flow in the heating resistor to be lowered due to a circuit being reestablished through the switching resistor.

3,585,356

LIQUID SUPPORT FOR HUMAN BODIES

Charles P. Hall, Muir Beach, Calif., assignor to Innerspace Environments, Inc., San Francisco, Calif.

Continuation-in-part of application Ser. No. 793,687, Jan. 24, 1969, now abandoned. This application July 27, 1970, Ser. No. 58,499
Int. Cl. A47c 27/08; A61h 9/00
U.S. Cl. 219—217 5 Claims



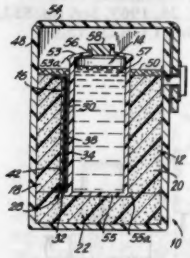
An article of furniture comprising a flexible bladder which is substantially filled with a liquid. A supporting framework is provided for holding the liquid filled bladder in such manner that a body resting upon the bladder is floatably supported by the liquid. Heating means is provided for maintaining a temperature of the liquid at a temperature on the order of the Temperature of the human body. In some embodiments, solid particles, such as styrofoam, are disposed in the bladder to dampen shock waves in the liquid and to provide additional support for a body resting upon the bladder.

3,585,357

HAIR SETTING DEVICE

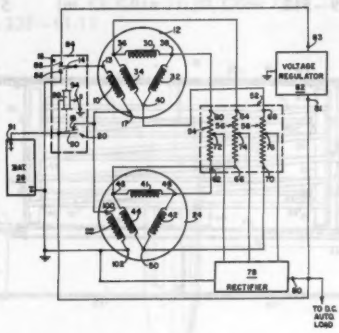
Arnold A. Mandell, New Rochelle, N.Y., and Henry Schein, West Orange, N.J., assignors to Brian-Lloyd Co., Inc., New York, N.Y.

Filed Jan. 30, 1969, Ser. No. 795,257
Int. Cl. A45d 4/12; H05b 1/00
U.S. Cl. 219—222 8 Claims



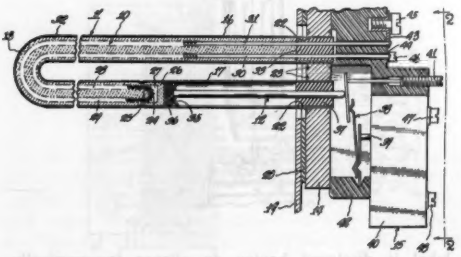
An electrical open-mouthed oven is provided to heat hollow hair rollers which contain a heat storage material. This material undergoes a change of state as the rollers are heated in the oven. It regains its original state upon cooling with the user's hair wrapped around the rollers. At least a portion of each roller placed in the oven is adjacent a longitudinal strip heat sink which forms one internal wall of the oven. A graphite coated heating element is secured to the opposite surface of the heat sink and is covered with appropriate insulation. Layers of foam polyester insulation serve as internal oven walls on the opposite side, end and bottom of the oven. The foam insulation is enclosed within a shell which serves as a carrying case for the oven.

3,585,358
AUTOMOTIVE QUICK HEAT SYSTEM
Ole K. Nilssen, Barrington Hills, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed July 24, 1969, Ser. No. 844,493
Int. Cl. F24d 11/100
U.S. Cl. 219—279 9 Claims



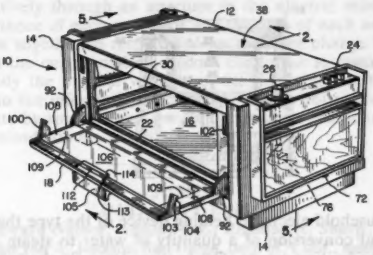
An auxiliary heating system for an automotive vehicle which utilizes two rotating field alternators for providing power to either a center tapped, resistive, quick heat load or to the DC load and battery of the automotive vehicle. The terminals of the quick heat load are connected to the alternators, and a center tap thereof is connected through the DC load to ground. A switching mechanism is operable to deliver field voltages of the same or opposite polarities to the alternators. When the field voltages are the same polarity, the output voltages of the alternators are in phase and deliver power to the DC load. When the field voltages are opposite in polarity the output voltages of the alternators are 180° out-of-phase and deliver power to the quick heat load.

3,585,359
ELECTRIC HEATING ELEMENTS
Lester D. Drugmand, Pittsburgh, Pa., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Oct. 24, 1969, Ser. No. 869,215
Int. Cl. F24h 1/00
U.S. Cl. 219—328 7 Claims



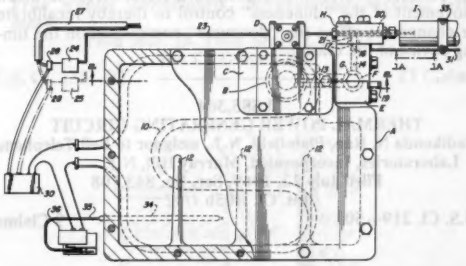
A metallic sheathed electric heating element, particularly of hairpin formation, wherein a heat responsive device forms part of the element and comprises a metal rod contained within the sheath and having its inner end affixed thereto, the rod and sheath having different thermal expansion properties whereby the rod may operate a switching device.

3,585,360
PORTABLE ELECTRIC COOKING APPLIANCE
Athel R. Young, and William F. Trelc, both of Boonville, Mo., assignors to McGraw-Edison Company, Elgin, Ill.
Filed July 8, 1969, Ser. No. 839,953
Int. Cl. F27d 11/02
U.S. Cl. 219—405 9 Claims



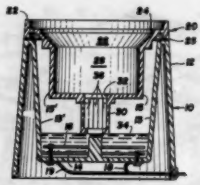
This portable electric cooking appliance has an open front case provided with a unitary front ledge, bottom wall and rear wall interconnected across rounded lower front and rear interior corners. Heating elements traversing the case enclosure are supported by the case walls and by a bus bar located outside of the enclosure so that easy after use cleaning of both the case and heating elements is readily possible. The enclosure door is easily removable by interfitting separable door tab and case cooperation, and the transparent glass window overlaps the inside of the door panel and is trapped between a fixed door flange and a flange of a movable bracket held in place opposite the door handle by a common securing screw.

3,585,361
SUPPLY SYSTEM FOR HEATING AND DISPENSING MOLTEN THERMOPLASTIC MATERIAL
Samuel R. Rosen, Lorain; Alan B. Reighard, Bay Village, and Julius S. Drozek, Lorain, all of, Ohio, assignors to Nordson Corporation, Amherst, Ohio
Filed June 18, 1969, Ser. No. 834,272
Int. Cl. F27b 11/06; F27d 11/02
U.S. Cl. 219—421 8 Claims



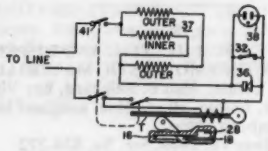
A system for melting thermoplastic material and supplying the molten material under pressure and at a controlled temperature to one or more applicators. The material is melted in a melting tank and pumped from there through a filter into a manifold for distribution. The pump is a single piston, double acting, sealless pump and is driven by an air motor including appropriate air valves and valve controls. From the manifold the molten material is distributed to one or more heated, insulated hoses, each of which is to be connected at its opposite end to an applicator. The temperature of the material in the melting tank and in each hose is separately thermostatically controlled.

3,585,362
PORTABLE ELECTRICAL HEATING DEVICE
Paul A. Hoogesteger, Penfield, and Charles R. McDougal, Pittsford, both of, N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Jan. 2, 1969, Ser. No. 788,457
Int. Cl. F27d 11/04
U.S. Cl. 219—437 11 Claims



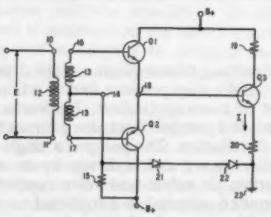
A household electrical heating device of the type that uses the rapid conversion of a quantity of water to steam as the operative heating means. The heating device is characterized in that means are provided for spilling of the water and prevention of contact with the water by the user when the heating element that is in direct contact with the water is energized.

3,585,363
CONVENIENCE FOOD TOASTER OPERABLE AT DIFFERENT WATTAGE LEVELS
David B. Price, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Apr. 9, 1969, Ser. No. 814,722
Int. Cl. H05b 1/02
U.S. Cl. 219—494 5 Claims



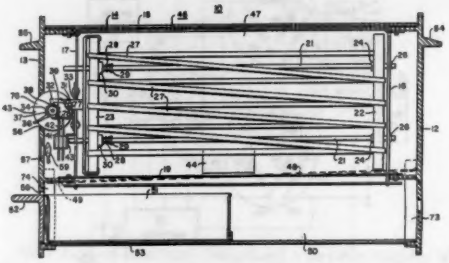
Control for a toaster. The control is characterized by the incorporation of a selector switch for reducing the operating wattage of the toaster to stretch the cycle. The actuator of the selector switch, in one position thereof, serves to block movement of the "doneness" control to thereby recalibrate or change the effect the "doneness" control has on the timing device of the toaster.

3,585,364
THERMAL POWER GENERATING CIRCUIT
Tadikonda N. Rao, Plainfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed July 22, 1969, Ser. No. 843,708
Int. Cl. H05b 1/02
U.S. Cl. 219—501 9 Claims



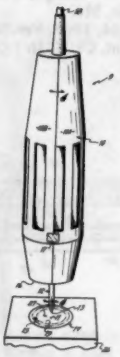
A thermal power generating circuit utilizes diodes and transistors having matched characteristics to convert available direct current power into thermal power which is proportional to the level of an input signal. An insignificant amount of power is taken from the signal source.

3,585,365
SWITCH AND TIMING MECHANISM FOR APPLIANCES
Paul J. Kircher, Mansfield, Ohio, assignor to Westinghouse Electric Corportation, Pittsburgh, Pa.
Filed Apr. 14, 1969, Ser. No. 815,744
Int. Cl. H05b 1/02
U.S. Cl. 219—512 5 Claims



An electrical appliance incorporating a heater structure. The appliance which may be a bacon cooker, or the like, is characterized by the provision of a digital timing device which utilizes the expansion and contraction characteristics of the heater structure for actuation thereof. The timing device includes a circuit opening and closing switch which is opened after a predetermined number of heat-up and cool-down cycles of the heater structure. The heat-up, cool-down cycles are accomplished through a temperature responsive, circuit interrupt switch.

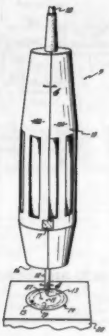
3,585,366
SELF-TIMING ENCODED TAG READER
Jack I. Kern, Kettering, Ohio, assignor to The Monarch Marking System Company, Dayton, Ohio
Filed Sept. 19, 1968, Ser. No. 760,840
Int. Cl. G01n 21/30; G06k 7/14
U.S. Cl. 235—61.11 6 Claims



A label is disclosed having an aligner symmetrically disposed relative to a circular pattern of circumferentially arranged photosensible information. Also disclosed is a reader having a probe engageable with the label aligner to properly locate the information pattern relative to a scanning transducer which is radially displaced about the probe for movement in a circular scan path coextensive with the circular information pattern on the label. The reader additionally includes clock signal means which generates clock signals at a rate substantially exceeding the information scanning rate,

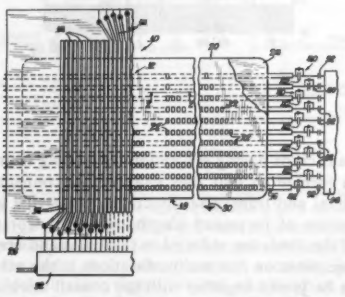
and sample signal means responsive to the clock signal and to a start mark on the tag for generating clock signals in synchronism with the scanning of the circularly arranged information.

3,585,367
SELF-TIMING ENCODED TAG READER
Ross C. Humbarger, Fairborn, Ohio, assignor to The Monarch Marking System Company, Dayton, Ohio
Filed Sept. 19, 1968, Ser. No. 760,841
Int. Cl. G01n 21/30; G06k 7/14
U.S. Cl. 235—61.11 **4 Claims**



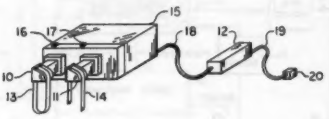
A label is disclosed having an aligner symmetrically disposed relative to a circular pattern of circumferentially arranged photosensible information. Also disclosed is a reader having a probe engageable with the label aligner to properly locate the information pattern relative to a scanning transducer which is radially displaced about the probe for movement in a circular scan path coextensive with the circular information pattern on the label. The reader additionally includes clock signal means which generates clock signals at a rate substantially exceeding the information scanning rate, and sample signal means responsive to the clock signal and to a start mark on the tag for generating clock signals in synchronism with the scanning of the circularly arranged information positions.

3,585,368
APPARATUS FOR CAPACITIVELY SENSING INFORMATION APERTURES IN DATA CARDS
Thomas A. Nunamaker, 837 Cuyler, Oak Park, Ill. 60302
Filed Aug. 8, 1969, Ser. No. 848,550
Int. Cl. G06k 7/08; G11b 9/06
U.S. Cl. 235—61.11 **3 Claims**



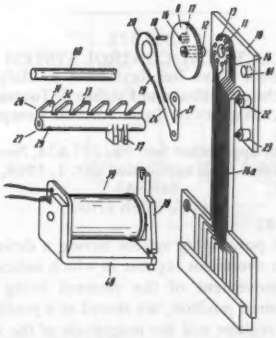
Card reading apparatus comprising a plurality of input conductors for disposition along one side of a data card incorporating an electric shield and a plurality of readout conductors for disposition along the opposite side of the card to establish a capacitive coupling between the readout conductors and the input conductors through selectively positioned apertures in the shield representing recorded information. A plurality of voltage stabilizing capacitors have output sides connected to the respective readout conductors. A plurality of voltage stabilizing amplifiers have inputs connected to the respective readout conductors and outputs connected to the input sides of the respective capacitors. Information receiving means is coupled to the input side of each capacitor to respond to the change in voltage applied thereto by the corresponding amplifier upon energization of an input conductor to which the corresponding readout conductor is coupled capacitively through an aperture in the electric shield. The capacitance of each capacitor and the gain of each amplifier operate together in response to an incipient change in voltage on the corresponding readout conductor to restore continuously the original voltage on the conductor so that the input to the information receiving means is not rendered inaccurate by spurious and parasitic capacitive relationships of the readout conductors to adjacent structure.

3,585,369
DATA TAPE EDITOR
Roy Edward Nather, Austin, Tex.; Rodman A. Sharp, La Jolla, and Jon A. Jenkins, San Diego, both of, Calif., assignors to Beckman Instruments, Inc.
Filed Feb. 13, 1968, Ser. No. 705,035
Int. Cl. G06k 7/04; B41j 5/36
U.S. Cl. 235—61.11 **8 Claims**



An instrument with two or more punched tape readers and a solenoid hand designed to control and enter data into a programmable desk calculator or similar instrument. Data on a calibration tape on one reader is employed to edit raw data on a data tape on another reader by selecting or rejecting specified data fields. The calibration tape may also store constants which are to be used repetitively in carrying out the program of the associated computer. Additional data readers may be employed to permit data from several sources to be combined in a single computer computation.

3,585,370
MULTIDIGIT ROLLER COUNTING MECHANISM
Fritz Kubler, Schwenningen(Neckar), Germany, assignor to Fritz Kubler Zahlerfabrik, Schwenningen(Neckar), Germany
Filed Mar. 18, 1968, Ser. No. 713,717
Int. Cl. G06m 1/28
U.S. Cl. 235—92 **17 Claims**



Counter having digit wheels and a moveable contact for each digit wheel moveable in unison therewith over a bank of

stationary contacts with spring means biasing each moveable contact toward its stationary contacts and with means for relieving the bias of said spring means upon the insertion of a value into the counter to eliminate frictional drag of the contacts on the digit wheels during indexing. The counter may include resetting means to reset the digit wheels to zero and the resetting means may also be coupled to the relieving means to free the digit wheels of frictional drag during resetting.

3,585,371

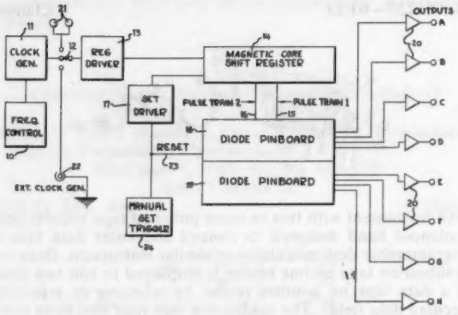
CONTROLLED SEQUENCE PROGRAMMING MEANS

Edward Camp Dowling, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of application Ser. No. 428,053, Jan. 26, 1965, now abandoned. This application July 25, 1969, Ser. No. 849,568

Int. Cl. H03k *3/82*

U.S. Cl. 235—92CT **4 Claims**



A programming means comprises a magnetic shift register to which is applied a selected frequency of pulses, a diode pinboard or card reader is connected to the output of the shift register and diode pins are inserted into the diode pinboards at selected positions or a card reader having desired information thereof selects pulses from the train of pulses emanating from the shift register to provide a desired repetitive output of pulses for the testing and evaluation of complex sequential digital systems and other applications.

3,585,372

ELECTRICAL CONTROL SYSTEM

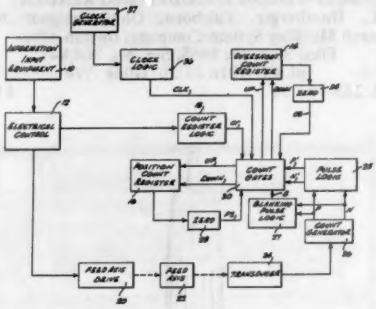
Raymond C. Bell, Playa Del Rey; Josef K. Holy, Torrance; John W. Tarbox, Malibu, and Esteban J. Toscano, Tarzana, all of, Calif., assignors to Huges Aircraft Company, Culver City, Calif.

Continuation of application Ser. No. 597,624, Nov. 29, 1966, now abandoned. This application Oct. 1, 1969, Ser. No. 868,963

Int. Cl. G05b *11/00*

U.S. Cl. 235—92 **14 Claims**

A numerical positioning system having a desired position register and an overshoot register in which indications of increments of movement of the element being positioned, beyond the desired position, are stored as a position count in the overshoot register and the magnitude of the count of the overshoot register is transferred to the position register and algebraically combined with a succeeding indication of desired position to indicate the succeeding extent of movement required to reach the succeeding desired position. Flexibility is obtained by utilizing desired position and overshoot registers which are bidirectional and reversible and which



when counted down to zero and beyond will change sign and start counting up.

3,585,373

PROGRAMME CARD

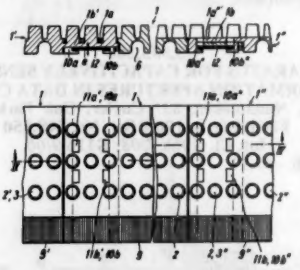
Rudolf Ramstetter, Am Wiesengrund 6, Starnberg 813, Germany

Filed Sept. 9, 1969, Ser. No. 856,400

Claims priority, application Germany, Sept. 18, 1968, Mar. 13, 1969, P 17 88 027.2, P 19 12 841.7

Int. Cl. G06r *19/00*

U.S. Cl. 235—61.12 **12 Claims**

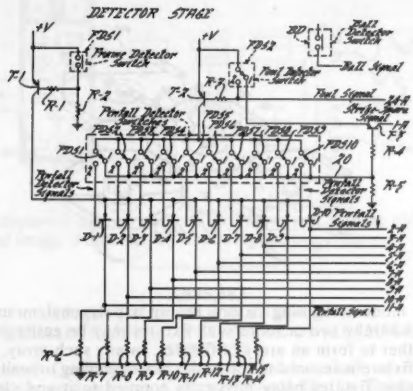


Program cards having projections extending from one surface are formed so that they can be interconnected in the longitudinal and transverse directions to provide a continuous member of increased length or width. Corresponding edges of the cards are reduced in thickness and are provided with projections on one and perforations in the other so that they can be joined together with the overall thickness of the joined edges being equal to the normal thickness of the card. To increase the flexibility of the card, the surface which does not contain the projections is provided with recesses which extend transversely of the longitudinal direction of the card. In addition, a rack is formed along one edge of the cards to assist in moving the cards through the control apparatus. A clamping strip can be used to assist in joining cards together.

3,585,374
BOWLING SCORE COMPUTER

Patrick J. Pollard, Warren, Mich., assignor to George Apostle and DeWayne P. Carlson, Muskegon, Mich., part interest to each

Filed Aug. 17, 1967, Ser. No. 661,395
Int. Cl. G06m 3/06
U.S. Cl. 235—92 GA 24 Claims

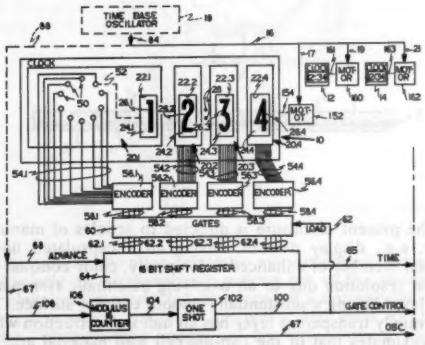


Apparatus for computing and recording bowling scores.

3,585,375
AIRCRAFT TIME INFORMATION SYSTEM

Geoffrey S. Hedrick, Bedford Hills, N.Y., assignor to Lear Siegler, Inc., Armonk, N.Y.

Filed Dec. 22, 1969, Ser. No. 887,214
Int. Cl. G08b 11/00
U.S. Cl. 235—92T 8 Claims

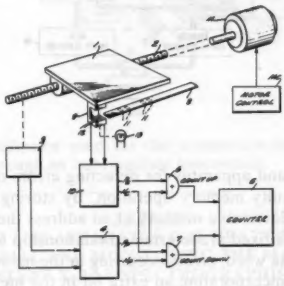


A multipurpose time information system which drives a plurality of digital clocks for respective members of the flight crew of a large airliner, and also provides time information to various remote systems on board, such as the AIDS, the flight recorder, the radio data link, the crash recorder, and the INS. The clocks include digital readout wheels which provide a visible display for the flight crew as well as the time information for the onboard systems, and also have inherent storage capabilities which are useful in case of brief power failures. These digit wheels are advanced by nearly identical drive modules, each having solenoid-operated ratchet mechanisms responsive to carry pulses derived from the preceding less significant digit module. But the least significant digit module is reverse-driven by a motor, requiring the ratchet mechanism to slip in the reverse direction, and also requiring the numerals on the least significant digit wheel to be arranged in the opposite direction relative to the more significant digit wheels.

3,585,376
POSITIONING SYSTEM

Esteban J. Toscano, Tarzana, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 25, 1968, Ser. No. 770,673
Int. Cl. G06f 15/46; G05b 19/18
U.S. Cl. 235—151.11 9 Claims

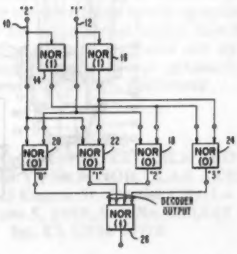


A positioning system for either incremental or absolute positioning applications in which a count pulse train is generated during positioning movement and a correction pulse is generated at one or more predetermined points along the path of movement and effectively added to or subtracted from the count pulse train, depending upon whether the member being positioned is predetermined to be beyond or behind the point indicated by the number of pulses of the count pulse train.

3,585,377
FAIL-SAFE DECODER CIRCUITS

Donald C. Jessep, Jr., Pound Ridge, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 16, 1969, Ser. No. 833,411
Int. Cl. H03k 13/34, 19/34
U.S. Cl. 235—153 7 Claims



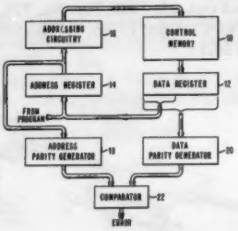
A fail-safe decoder utilizing individual fail-safe logic components. The decoder is designed of layers of alternate failure mode logic circuits so that a failure of any of the individual logic elements will always produce an error signal if said failure would cause an output error.

3,585,378

ERROR DETECTION SCHEME FOR MEMORIES

Willard G. Bouricius, Katonah, and Keith A. Duke, Wappingers Falls, both of, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1969, Ser. No. 837,753
Int. Cl. G11c *29/00*; H03k *13/34*
U.S. Cl. 235—153 11 Claims



A method and apparatus for detecting errors occurring as a result of faulty memory operation. By storing every data word in an addressable memory at an address therein having a parity with a fixed predetermined relationship to the parity of the said data word, errors occurring in the memory may be detected. By incorporating an extra bit in the memory word, the error can be isolated and by incorporating two extra bits, double word readout errors may be detected.

ERRATA

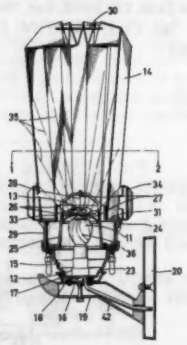
For Classes 240—41, 240—1, 240—52 see: Patent Nos. 3,584,793 thru 3,584,795

3,585,379

LIGHTING FIXTURE

Bunitu Yamamoto, Himeji-shi, Hyago-ken, and Yoshikei Murakami, Tondabayashi-shi, Osaka-fu, both of, Japan

Filed Sept. 6, 1968, Ser. No. 758,015
Int. Cl. F21s *1/02*
U.S. Cl. 240—73 3 Claims



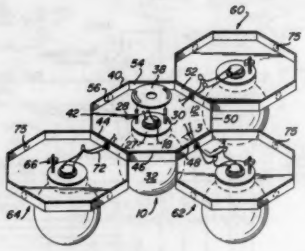
A lighting fixture for producing a flamelike flickering light. A bulb in a light socket is surrounded by an opaque hollow tube for causing air to flow upwardly over the light bulb. A bladed rotor is rotatably mounted on the hollow tube above the light bulb, and an external tube of semitransparent material surrounds the upper end of the hollow tube and extends substantially vertically upwardly therefrom. The sides of the external tube are bent zigzag along vertical folds.

3,585,380

MODULAR LIGHTING FIXTURE

Julius Friedman, Levittown, and Carl Wellhofer, Glenside, both of, Pa., assignors to Walter Kidde & Co., Inc., Belleville, N.J.

Filed Oct. 23, 1968, Ser. No. 769,783
Int. Cl. F21s *1/06*, *1/14*
U.S. Cl. 240—78 9 Claims



A modular lighting fixture having a polygonal mounting pan whereby two or more such fixtures may be easily joined together to form an array of fixtures. In any such array, only one fixture is secured to the outlet box on ceiling or wall with all other fixtures being physically coupled to it and electrically coupled through it.

3,585,381

ENCAPSULATED CHOLESTERIC LIQUID CRYSTAL DISPLAY DEVICE

Theodore L. Hodson, Bellbrook; James V. Cartmell, Dayton; Donald Churchill, Kettering, and Joe W. Jones, Dayton, all of, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Apr. 14, 1969, Ser. No. 815,662
Int. Cl. G01n *21/00*
U.S. Cl. 250—47 15 Claims

The present disclosure is directed to articles of manufacture, e.g., display devices, having an encapsulated liquid-crystal member of enhanced color purity, color contrast and visual resolution due to an overlying essentially transparent top layer having a substantially smooth exterior surface. This essentially transparent layer has an index of refraction which approximates that of the capsule cell wall material and any polymeric or other binder used in conjunction with the encapsulated liquid crystals in the encapsulated liquid crystal layer or member.

3,585,382

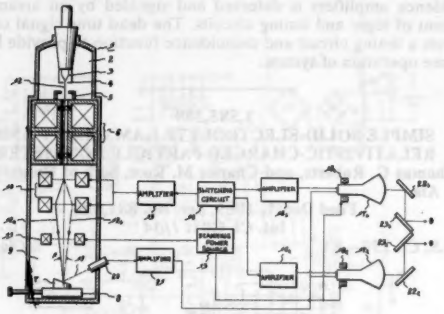
STEREO SCANNING ELECTRON MICROSCOPE

Tadao Suganuma, Tokyo, Japan, assignor to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan

Filed May 26, 1969, Ser. No. 827,651
Claims priority, application Japan, May 28, 1968, 43-36264
Int. Cl. H01j *37/26*
U.S. Cl. 250—49.5 3 Claims

A stereo-scanning electron microscope for scanning a specimen surface with an electron beam by liberating electrons from the specimen which are detected and an image formed on a cathode ray tube. The axis of the electron beam

is directionally switched to change the incidence angle of the beam so that images corresponding to two incidence angles

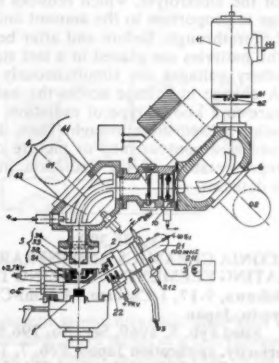


are displayed on two cathode ray tubes and a three dimensional image is obtained by observing the two images.

3,585,383
MICROANALYZER FOR PRODUCING A CHARACTERISTIC IONIC IMAGE OF A SAMPLE SURFACE

Raymond Castaing, and Georges Slodzian, both of Paris, France, assignors to Centre National De La Recherche Scientifique and CSF-Compagnie Generale De Telegraphie Sans Fil

Continuation of application Ser. No. 326,566, Nov. 27, 1963. This application Jan. 3, 1966, Ser. No. 518,453
Int. Cl. G01n *23/00;* **H01j** *37/00*
U.S. Cl. 250—49.5 **5 Claims**



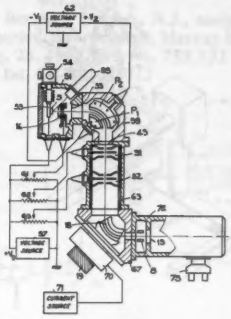
The present invention relates to microanalysers and more particularly to microanalysers making use of the secondary ion emission for producing, by means of a corpuscular optical system which combines ion optics and mass spectrography, "characteristic images" of the surface of the sample which indicate the map of distribution of its various elements or isotopes.

3,585,384
IONIC MICROANALYZERS

Raymond Castaing, and Georges Slodzian, both of Paris, France, assignors to Centre National De La Recherche Scientifique and Thomson-CSF

Continuation of application Ser. No. 712,406, Mar. 12, 1968, Continuation-in-part of application Ser. No. 518,453, Jan. 3, 1966, now abandoned , Continuation of application Ser. No. 326,566, Nov. 27, 1963, now abandoned. This application Nov. 19, 1969, Ser. No. 871,675
Int. Cl. H01j *37/26*
U.S. Cl. 250—49.5 **6 Claims**

In an ionic microanalyzer, the energy filtering of the ions of the beam providing an image of a sample is effected by means of a spherical capacitor, suitably associated with the

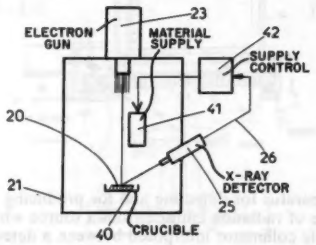


magnetic deflector used for the momentum-to-charge ratio filtering, through an intermediate lens system.

3,585,385
METHOD AND APPARATUS FOR HEAT TREATING A MATERIAL AND MONITORING THE MATERIAL CONTENT X-RAY SPECTROGRAPHICALLY

Bernard Daigne, Malakoff, and Francois Girard, Paris, both of, France, assignors to Office National D'Etudes Et De Recherches Aerospatioles,, Chatillon-sous-Bagneux, France

Filed May 2, 1968, Ser. No. 726,059
Claims priority, application France, May 5, 1967, 105,259
Int. Cl. H01j *37/00;* **G01n** *23/00*
U.S. Cl. 250—49.5 **14 Claims**



An apparatus and method for the heat treatment of a material in an enclosure comprising an electron gun for treating the material and means for the spectrographic analysis of the X-rays emitted by the material under bombardment by the electron gun. The method is carried out by continuous spectrographic analysis of the X-rays produced so that a monitoring of the heat treatment is performed.

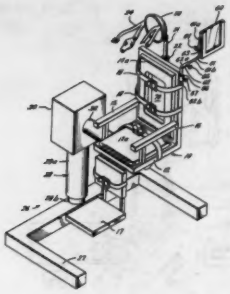
3,585,386
RADIOGRAPHIC CHAIR ROTATABLE ABOUT TWO MUTUALLY PERPENDICULAR AXES

Jerry L. Horton, 2925 Eugene St., Bossier City, La. 71010

Filed June 5, 1969, Ser. No. 830,665
Int. Cl. G03b *41/16*
U.S. Cl. 250—50 **5 Claims**

The apparatus disclosed includes a patient-supporting chair that is mounted on a shaft for rotation with the shaft as the shaft rotates around its longitudinal axis. The chair can be rotated around a second axis that is perpendicular to the longitudinal axis of the shaft. This allows the chair to be oriented to rotate with the patient facing toward or away from the direction of rotation to place the patient in positions such as head-up, head-down, brow-up or brow-down. Also,

the chair can be oriented with the patient facing generally perpendicular to the direction of rotation of the chair for movement of the patient to positions such as the right and left decubitas positions.



3,585,387

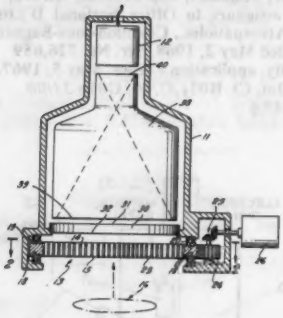
RADIATION DETECTION AND IMAGING MACHINE

Roland C. Bramlet, 245 West 107th St., New York, N.Y.

Filed Aug. 1, 1968, Ser. No. 749,480

Int. Cl. G01t *1/202*

U.S. Cl. 250—71.5 **10 Claims**



An apparatus for detecting and for producing an observable image of radiation emitted from a source which includes a rotatable collimator interposed between a detector and the source. In operation, the collimater is rotated during exposure to the source. A preferred detector is a crystal that translates radiation into an optical signal.

3,585,388

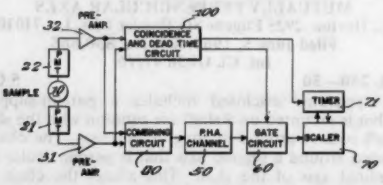
DEAD TIME GENERATOR FOR LIQUID SCINTILLATION COUNTING SYSTEM

Barton H. Laney, Deerfield, Ill., assignor to Nuclear-Chicago Corporation, Des Plaines, Ill.

Filed Nov. 8, 1968, Ser. No. 774,392

Int. Cl. G01t *1/20*

U.S. Cl. 250—71.5 **8 Claims**



A combined coincidence and dead time signal generator incorporated in a liquid scintillation counting system employing pulse height analysis. Coincidence amplifiers are constructed to have dead time at least as great as that of pulse height analysis channels at any setting. Dead time of coincidence amplifiers is detected and signaled by an arrangement of logic and timing circuits. The dead time signal controls a timing circuit and coincidence function to provide live time operation of system.

3,585,389

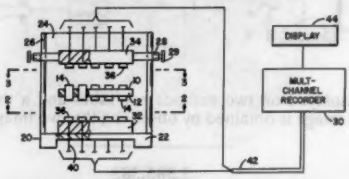
SIMPLE SOLID-ELECTROLYTE GAMMA-RAY AND RELATIVISTIC-CHARGED PARTICLE DOSIMETER

Thomas G. Roberts, and Charles M. Rust, both of Huntsville, Ala.

Filed Dec. 1, 1969, Ser. No. 881,028

Int. Cl. G01t *1/04*

U.S. Cl. 250—83 **8 Claims**



A gamma-ray and relativistic charge particle detector and method for measuring the amount of radiation passed through the detector. The detector is a dosimeter comprising a plurality of equally spaced batteries disposed to form a series of columns and rows within a plane having vertical and horizontal rectangular coordinate axes. The batteries, radiation sensors, can be repeatedly charged and discharged with very little characteristic change in the discharge curve. The batteries have a solid electrolyte and a low voltage output. Radiation passing through the electrolyte causes partial ionization of the electrolyte, which reduces the battery terminal voltage in proportion to the amount and type of radiation passed therethrough. Before and after being exposed to radiation, the batteries are placed in a test stand and the individual battery voltages are simultaneously measured and recorded. A change in voltage across the battery terminals, after exposure to a known type of radiation, is proportional to the radiation passed therethrough. Thus, differential voltage, displayed as a contour map or picture of the radiation pulse, is representative of the radiation intensity passing through the detector.

3,585,390

ZIRCONIA CERAMICS AND INFRARED RAY RADIATING ELEMENTS UTILIZING THE SAME

Tadashi Ishikawa, 9-17, 1-Chrome, Minami-Cho, KoKubunjishi, Tokyo-to, Japan

Filed Feb. 5, 1969, Ser. No. 796,699

Claims priority, application Japan, Feb. 7, 1968, Apr. 24, 1968, Apr. 24, 1968, 43/7116;43/27105;43/27106

Int. Cl. G21h *5/00*

U.S. Cl. 250—84 **5 Claims**

Black zirconia ceramics are prepared by firing a mixture containing more than 45 percent, by weight, of a $ZrO_2 \cdot SiO_2$ component, up to 25 percent, by weight of a mineralizer consisting of manganese oxide, at least one of oxides of iron, cobalt, nickel or chromium, and the balance of clay. The fired black zirconia ceramics emit a large quantity of infrared rays of long wavelength when heated to about 500° C., and are suitable to effect, heating, baking, cooking, drying, etc.

3,585,391

BRIGHTNESS STABILIZER WITH IMPROVED IMAGE QUALITY

Melvin P. Siedband, Baltimore, and Philip A. Duffy, Jr., Catonsville, both of, Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

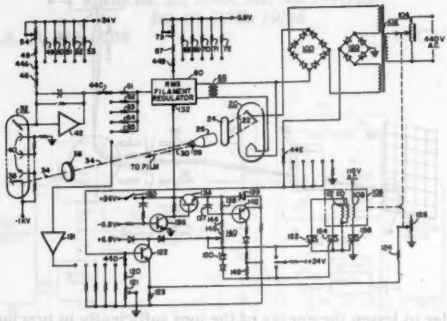
Filed Sept. 24, 1969, Ser. No. 860,687

Int. Cl. H05g *1/36*

U.S. Cl. 250—95 **13 Claims**

A brightness stabilizer which permits the radiologists to operate X-ray apparatus in fluoroscopic modes or in other

modes of operation where an image intensifier is used, such as cine or 70-mm. spotfilms, in such a way as to expose the



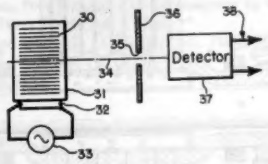
patient to the lowest level of radiation possible as a function of the type of X-ray image required.

3,585,392

PHASE-MODULATED LIGHT DETECTION

Adrianus Korpel, Prospect Heights, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Mar. 25, 1968, Ser. No. 715,614
Int. Cl. H04b *9/00*
U.S. Cl. 250—199 **7 Claims**



A beam of coherent monochromatic light from a laser interacts with an acoustic wave signal in a Debye-Sears interaction cell, thereby to phase modulate the beam with the acoustic wave signal and with intelligence information carried thereby. At a fixed distance along the beam path from the interaction cell the modulation of the light beam shall have been converted from phase to amplitude modulation and a slit positioned at such location admits both the undiffracted and the first-order diffracted components of the modulated beam to a detector where the beam is demodulated and the intelligence recovered.

Increased efficiency is obtained by using a series of slits, rather than a single slit, disposed across the light beam at the aforesaid particular location.

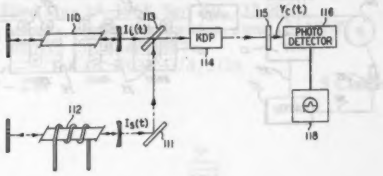
Where Bragg angle diffraction is achieved in an interaction cell, as distinguished from Debye-Sears diffraction, the emerging light beam exhibits both amplitude and phase modulation. If the system employs two acoustic wave signals interacting with a single light beam in the cell, with the pair of acoustic wave signals having the proper angular relation, the output of the interaction cell may be demodulated as to its phase modulation content by the same technique employed in demodulating the output of the Debye-Sears diffraction cell. This increases the efficiency of the system over what is otherwise obtained if demodulation is confined to the initial amplitude modulation of the modulated light beam.

3,585,393

DISPLAY OF OPTICAL PULSES BY TAKING CONVOLUTION OF SUCH PULSES WITH A TRAIN OF SAMPLING PULSES IN A NON-LINEAR OPTICAL MEDIUM

Michael A. Duguay, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 26, 1968, Ser. No. 755,132
Int. Cl. H01j *39/12*
U.S. Cl. 250—217 **7 Claims**



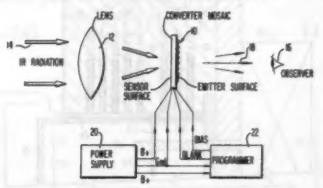
Picosecond optical pulses of periodicity T are displayed by generating the convolution of the optical pulses in a nonlinear optical medium (e.g., a KDP crystal) with a train of picosecond sampling pulses of periodicity $nT+\delta T$, where n is a simple fraction and δT is a small fraction of T. The output of the nonlinear medium is detected and displayed on a conventional oscilloscope. The oscilloscope trace is a sampled display of the optical pulses with picosecond resolution and time scale magnification $(T/\delta T+1)$.

3,585,394

IMAGE CONVERTER HAVING A TIME VARYING BIAS CONTROL

Richard F. Higby, Severna Park, and Edgar L. Irwin, Glen Burnie, both of, Md., assignors to Westinghouse Electric, Pittsburgh, Pa.

Filed Mar. 3, 1969, Ser. No. 803,559
Int. Cl. H01j *31/50, 39/12*
U.S. Cl. 250—213 **10 Claims**



An image converter for converting infrared images to visible images. A four-layer semiconductor sensitive to infrared radiation functions as a switch. The conductive state of the switch controls the radiation from a visible light-emitting element. A threshold bias with increases with time, is applied to the four-layer semiconductor between periodic blanking signals.

3,585,395

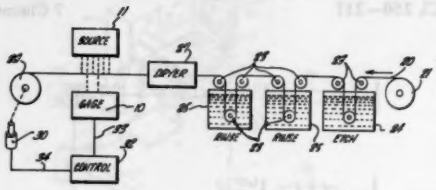
CONTROL OF HOLE SIZE IN FILTERS BY MEASURING THE AMOUNT OF RADIATION PASSING THROUGH HOLES AND CORRESPONDINGLY CONTROLLING SPEED OF FILTER MOVING THROUGH ETCHING BATH

Maurice A. Robkin, Castro Valley, and Charles R. Porter, Livermore, both of, Calif., assignors to General Electric Company, New York, N.Y.

Filed Sept. 6, 1966, Ser. No. 577,231
Int. Cl. G01n *15/08*
U.S. Cl. 250—219 **6 Claims**

A method and an apparatus for continuously manufacturing a filter web including continuously measuring and con-

trolling hole size are disclosed. This system basically includes an etching tank through which a fission-fragment irradiated web is fed to form holes therein, a radiation means on one side of the etched web and a radiation detector on the other



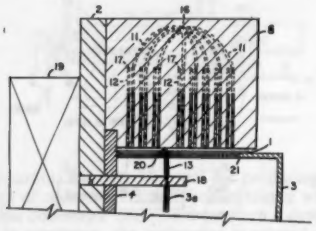
side which is adjusted to measure only radiation which at least partially passes through holes in the web and means responsive to said measurement to adjust web residence time in the etchant to maintain hole size in the desired range.

3,585,396

APPARATUS AND METHOD FOR SENSING PERFORATIONS IN A PERFORATED MEMBER

James M. Ferguson, Eau Gallie, and Ralph P. Means, Melbourne, both of, Fla., assignors to Mohawk Data Sciences Corporation, Herkimer, N.Y.

Filed Apr. 1, 1969, Ser. No. 812,222
Int. Cl. G08c 9/06
U.S. Cl. 250—227 **5 Claims**



An apparatus and method for sensing perforations in a perforated member by illuminating a surface of the perforated member at a read station and thereby passing light through any perforations present there. Some of the light passing through each perforation is reflected back through the perforation it previously passed through and onto a photocell. Fiber-optic bundles are utilized to guide light from a light source to the read station and from the read station to the photocells once the light has been reflected and passed back through the perforations.

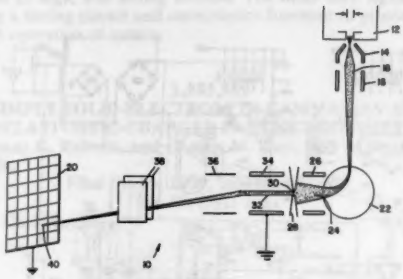
3,585,397

PROGRAMMED FINE ION IMPLANTATION BEAM SYSTEM

George R. Brewer, Malibu, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 4, 1968, Ser. No. 765,120
Int. Cl. H01j 37/26, 27/00, 29/76
U.S. Cl. 250—49.5 **7 Claims**

A very small spot from an ion beam is effected by utilizing one or more apertured plates having a central hole through which only a small portion of the ion beam can pass. Decelerating electrodes may be placed before the aperture in



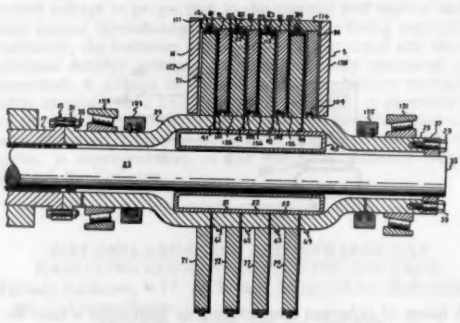
order to lessen the energy of the ions sufficiently to preclude sputtering of the aperture.

3,585,398

BRUSHLESS EXCITATION OF A STEAM TURBINE GENERATOR UTILIZING A DRIVER ACYCLIC GENERATOR

Luke M. Harvey, Schenectady, N.Y., assignor to General Electric Company

Filed Oct. 13, 1969, Ser. No. 865,913
Int. Cl. H02k 7/18
U.S. Cl. 290—52 **6 Claims**

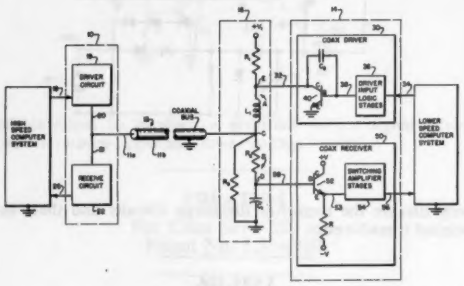


DC excitation for a steam turbine generator rotating at speeds of 1,800 to 3,600 revolutions per minute is provided by an acyclic generator mechanically joined to the rotor of the steam turbine generator by coaxial electrical conductors extending axially into the steam turbine generator rotor. At a location remote from the steam turbine generator, the outer coaxial conductor is divided into axially adjacent segmented sections by insulating discs of, for example, aluminum oxide, and the rotary halves of first and second liquid metal collectors of an acyclic generator are disposed on each segment to produce current flow in the outer coaxial conductor. The generated current then is conducted through the outer coaxial conductor to one terminal of the steam turbine generator field windings and the current returns to the acyclic generator through the inner coaxial conductor and a clamp electrically interconnecting the coaxial conductors at the ends of the conductors remote from the steam turbine generator. A suitably insulated stainless steel drum also is provided in an underlying attitude relative to the segmented portions of the outer coaxial conductor to support the acyclic generator rotor situated thereon.

3,585,399
TWO IMPEDANCE BRANCH TERMINATION NETWORK FOR INTERCONNECTING TWO SYSTEMS FOR BIDIRECTIONAL TRANSMISSION

John R. Andrews, Jr., Framingham, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 28, 1968, Ser. No. 771,155
Int. Cl. H03k 19/08
U.S. Cl. 307—208 15 Claims

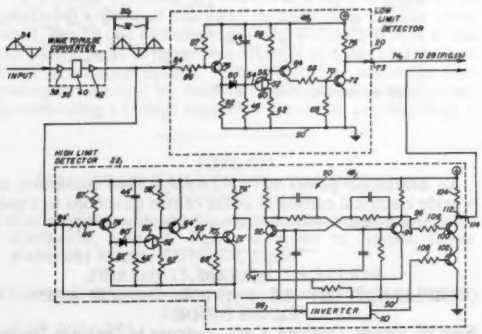


A low-noise, impedance-matching network consisting of two impedance branches interconnects two data processing systems of different constructions through a transmission line and provides a matched bidirectional interconnection therebetween. The transmission line connects to one digital system from a common point of the two-branch network, and transmit and receive parts of the second system connect to different branches of the network.

3,585,400
ELECTRICAL FREQUENCY DETECTING DEVICE AND METHOD

Jack L. Brayton, Newington, Conn., assignor to Gosh Instruments, Inc., West Hartford, Conn.

Filed Dec. 12, 1968, Ser. No. 783,295
Int. Cl. H03k 9/06
U.S. Cl. 307—233 28 Claims

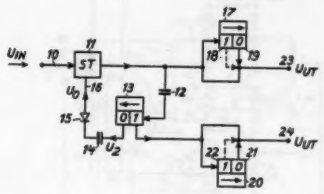


An electrical device and method for determining whether a plurality of input pulses occur at a repetition rate which is above or below a given reference rate involves the use of a timing means in the form of a capacitor timing circuit which is discharged by each input pulse and which is charged to a predetermined triggering level and produces output pulses if such input pulses do not occur at or above the reference rate. A wave-to-pulse converter is connected with the input of the basic device to adapt it for use in determining the frequency of input signals in the form of sine waves, square waves or other cyclical waves other than pulses. A flip-flop and an AND or NAND gate may be connected to the output of the basic device to produce output pulses when the input signal has a frequency or pulse repetition gate greater than the reference frequency or rate, and two units may be combined to produce a band detector for determining whether the input signal has a frequency or pulse repetition rate falling within a given band.

3,585,401
AMPLITUDE DISCRIMINATOR

Heinz Georg Karl, Trangsund, Sweden, assignor to Telefonaktiebolaget L. M. Ericsson, Stockholm, Sweden

Filed May 29, 1968, Ser. No. 733,082
Claims priority, application Sweden, June 15, 1967, 8446/1967
Int. Cl. H03k 5/18, 3/26
U.S. Cl. 307—235 5 Claims

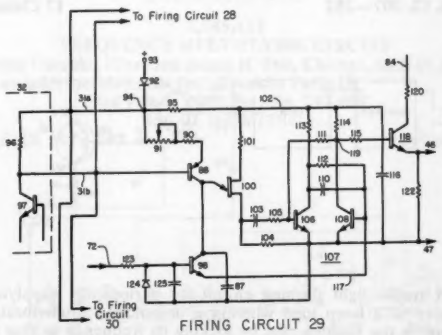


An amplitude discriminator comprises a Schmitt-trigger circuit which receives the signal whose amplitude is to be monitored. The output of the Schmitt-trigger circuit is fed to a monostable multivibrator whose output is fed back to the input of the Schmitt-trigger circuit via a diode-capacitor circuit.

3,585,402
SCR FIRING CIRCUIT

Dudley D. Nye, Jr., Fort Lauderdale; Thomas Pantelakis, Margate, and Donald J. Wilson, Fort Lauderdale, all of, Fla., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed July 3, 1969, Ser. No. 838,977
Int. Cl. H03k 17/00
U.S. Cl. 307—247 11 Claims



An SCR firing circuit is provided for each SCR in a multiphase power circuit supplying a DC motor. Each firing circuit includes an output transistor, controlled in the on-off mode by a multivibrator circuit, for providing continuous gate drive to its associated SCR when the multivibrator switching circuit turns it on. A charging circuit includes a capacitor and a transistor connected so that a control signal applied to the transistor determines the rate of capacitor charge. When a predetermined voltage is applied across the capacitor, a unijunction transistor fires and applies a trigger signal to the multivibrator switching circuit for applying a continuous gate drive to the SCR. A signal from the input

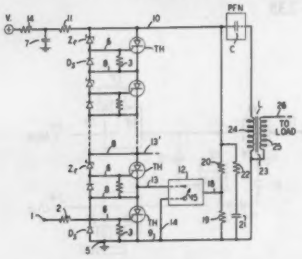
AC line which supplies the power circuit is utilized to reset the multivibrator switching circuit and remove the gate drive at the proper time.

3,585,403

AUXILIARY TURNOFF CIRCUIT FOR A THYRISTOR SWITCH

John G. Gribbons, Rockaway, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Sept. 24, 1968, Ser. No. 761,980
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 **6 Claims**



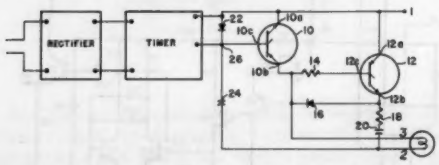
An auxiliary turnoff circuit for a thyristor switch string in which a normally open switch, connected across at least one of the thyristors in the string, is caused to repeatedly close should the string permanently latch on. The first closure is timed to occur after the automatic turnoff circuit has failed to open the switch string and the closed intervals are greater than the normal recovery time of the thyristors in the string.

3,585,404

SOLID STATE ELECTRONIC AC SWITCHING DEVICE

Theodore W. Le Vake, Bellevue, Wash., assignor to United Control Corporation, Redmond, Wash.

Continuation of application Ser. No. 496,486, Oct. 15, 1965, now abandoned. This application Nov. 4, 1968, Ser. No. 774,587
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 **17 Claims**



A traffic light flashing circuit for periodically supplying power to a lamp load wherein a unijunction multivibrator controls the flashing rate by locking its frequency to that of the power source with the multivibrator output periodically disabling two Silicon Control Rectifiers coupling the power source to the lamp.

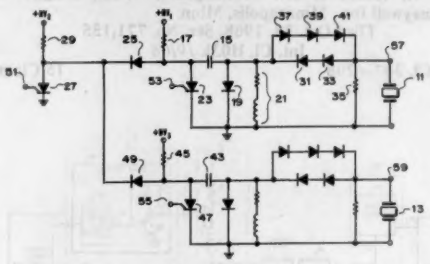
3,585,405

ULTRASONIC TRANSMITTER SWITCHING CIRCUIT

Robert L. Stettiner, Lexington, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 11, 1969, Ser. No. 806,248
Int. Cl. H03k *17/00*
U.S. Cl. 307—252C **3 Claims**

Two ultrasonic transducers are pulsed from respective capacitor discharge circuits which are driven from a single high voltage, high speed, silicon-controlled rectifier switch. Low-power current shunting switches are operable to selectively disable the capacitor discharge circuits and their associated transducers.

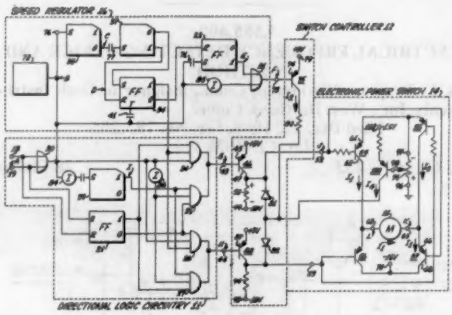


3,585,406

SYSTEM FOR CONTROLLING INTERMITTENT AND BIDIRECTIONAL OPERATION OF MOTORS

Gene J. Colter, Minneapolis, Minn., assignor to Honeywell Information Systems Inc.

Division of Ser. No. 542,333, May 5, 1967, filed June 3, 1968, Ser. No. 734,153
Int. Cl. H03k *17/00*
U.S. Cl. 307—254 **3 Claims**



An electronic power switch employs four transistors to provide electrical current in either of two directions to a pair of current output terminals from a single power supply.

3,585,407

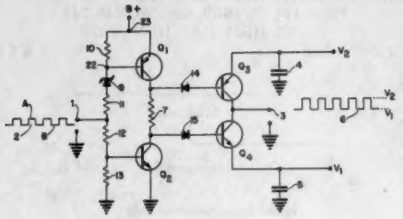
COMPLEMENTARY TRANSISTOR SWITCH USING A ZENER DIODE

Neal W. Vinson, Oakland, Calif., assignor to Bechman Instruments, Inc.

Filed Dec. 4, 1967, Ser. No. 687,611
Int. Cl. H03k *17/00*
U.S. Cl. 307—255 **2 Claims**

A high-speed electronic-switching circuit including two functionally interdependent stages, each stage comprising a pair of complementary transistors. The transistor of the output stage have their collector electrodes connected directly to each other and to an output terminal and their emitter electrodes connected to separate sources of potential. The transistors of the input stage have their base electrodes connected to a voltage dividing network including a Zener diode, and through that network to an input signal that alternately drives each transistor of the output pair of transistors into

saturation in accordance with the level of the input signal to thereby alternately couple each potential source to the output terminal to produce a resultant output signal having predetermined upper and lower voltage levels.



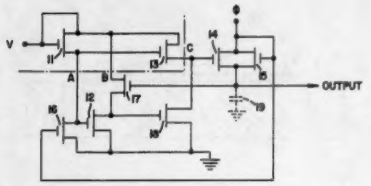
ERRATUM

For Class 307—257 see:
Patent No. 3,584,920

3,585,408
MOSFET CIRCUIT FOR EXTENDING THE TIME DURATION OF A CLOCK PULSE

Alton O. Christensen, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.

Filed July 17, 1969, Ser. No. 842,527
Int. Cl. H03k *1/18*
U.S. Cl. 307—267 **13 Claims**

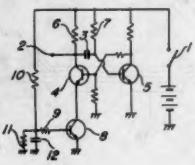


A MOSFET circuit is disclosed which is capable of generating a pulse of extended duration from a given clock pulse. The circuit includes regenerative mans effective at the end of the pulse of extended duration in order to provide a sharp termination thereof. A method of and means for controlling the amount by which the pulse duration is extended by controlling a voltage applied to the circuit are described.

3,585,409
MONOSTABLE MULTIVIBRATOR INCLUDING RESETTING MEANS

Takaaki Kato, Toyohashi-shi, and Mamoru Kawakubo, Kariya-shi, both of, Japan, assignors to Nippon Denso Kabushiki Kaisha, Kariya-shi, Japan

Filed July 15, 1969, Ser. No. 841,829
Claims priority, application Japan, Sept. 19, 1968, 43/81890
Int. Cl. H03k *3/10*
U.S. Cl. 307—273 **1 Claim**

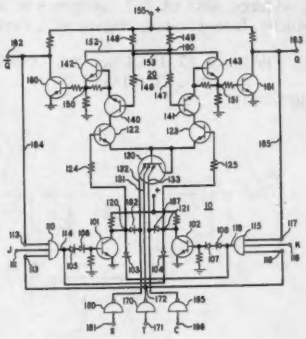


A monostable multivibrator including resetting means, comprising a third transistor connected in series with that one of two transistors constituting a monostable multivibrator which applies a voltage between the base and the emitter of the other one of said two transistors upon conduction thereof, and a parallel circuit of a resistor and capacitor connected between the base and the emitter of said third transistor, thereby rendering said other transistor conductive first under any condition when a power source switch is closed.

3,585,410
MASTER-SLAVE J-K FLIP FLOP

Richard D. Burtness, Little Silver, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Jan. 22, 1969, Ser. No. 792,944
Int. Cl. H03k *3/26*
U.S. Cl. 307—291 **8 Claims**

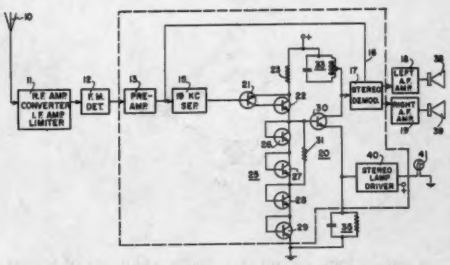


A J-K master-slave flip-flop having improved internal propagation and drive characteristics is realized in monolithic integrated form. Improved internal signal propagation is achieved by utilizing current steering to control slave switching. Drive requirements are minimized by using input gates which are fabricated on the monolithic chip.

3,585,411
FREQUENCY MULTIPLYING CIRCUIT

Gildo Cecchin, Niles, and James H. Feit, Chicago, both of, Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 6, 1969, Ser. No. 797,008
Int. Cl. H03b *19/00*
U.S. Cl. 307—295 **12 Claims**



A silicon, monolithic, integrated-circuit, stereo multiplex receiver includes a 19 kc. doubler circuit responsive to the 19 kc. pilot signal present in the stereo multiplex composite signal received. The doubler circuit includes an NPN in-

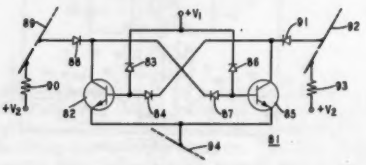
tegrated circuit transistor amplifier connected to a 38 kc. LC tank circuit, with the base of the amplifier being supplied with the 19 kc. signals across a string of series connected integrated circuit transistors which provides logarithmic compression of the 19 kc. signals; so that the transistor amplifier is not driven into saturation. An RC filter circuit is connected to the emitter of the transistor amplifier, to provide a further degenerative back-bias for the transistor aiding in preventing the driving of the transistor into saturation. The 38 kc. signals present on the collector of the transistor amplifier are supplied to a stereo demodulator circuit and the signal present at the emitter of the transistor amplifier is used as the input to a stereo lamp driver circuit.

3,585,412

SCHOTTKY BARRIER DIODES AS IMPEDANCE ELEMENTS

David A. Hodges, Mountainside, and Martin P. Lepselter, New Providence, both of, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Aug. 27, 1968, Ser. No. 755,610
Int. Cl. H03k *3/26*
U.S. Cl. 307—303 **6 Claims**



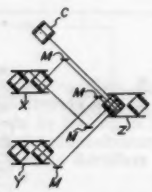
The reverse characteristic of Schottky barrier diodes provides easily fabricated, small area, high impedance elements for micropower circuits. Advantageously, the diodes are fabricated within semiconductive integrated circuit arrays by forming rhodium silicide on relatively high resistivity P-type silicon. Such diodes are particularly useful in the loads of flip-flops used as cells of a semiconductor memory.

3,585,413

OPTICAL LOGIC CIRCUIT

Yukio Nakagome; Yasuo Koseki, and Takao Tanaka, all of Tokyo, Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo-to, Japan

Filed Sept. 9, 1968, Ser. No. 758,484
Claims priority, application Japan, Sept. 13, 1967, 42/58331
Int. Cl. H03k *19/00*
U.S. Cl. 307—312 **7 Claims**



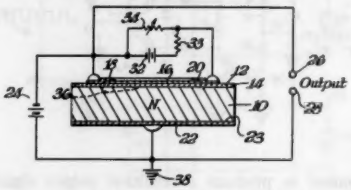
A optical logic circuit comprising a plurality of groups connected in cascade arrangement, where each of the groups comprises at least one bistable laser, the plural groups being pumped by polyphase pumping inputs which are successively switched at overlapped periods, two outputs of at least one bistable laser of a preceding group are employed to quench respectively different laser elements of at least one bistable laser of a just succeeding group.

3,585,414

CONTINUOUSLY TUNABLE VARACTOR

Mario Ghezzo, North Adams, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Aug. 7, 1969, Ser. No. 848,241
Int. Cl. H03k *3/53;* **H01l** *11/00*
U.S. Cl. 307—320 **6 Claims**



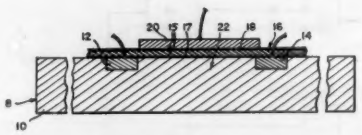
A resistive plate insulatively spaced from a semiconductive body, is adapted for application of potential gradient thereacross such that capacitance between the plate and body varies substantially continuously in accordance with said potential gradient.

3,585,415

STRESS-STRAIN TRANSDUCER CHARGE COUPLED TO A PIEZOELECTRIC MATERIAL

Richard S. Muller, Berkeley, and James Conragan, Sunnyvale, both of, Calif., assignors to The Regents of the University of California

Filed Oct. 6, 1969, Ser. No. 864,058
Int. Cl. H01v *7/00*
U.S. Cl. 310—8 **12 Claims**



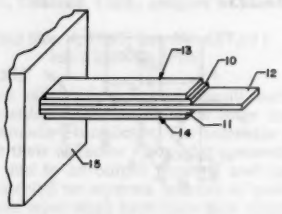
A piezoelectric material is connected to a semiconductor having source and drain electrodes at opposite ends thereof. The piezoelectric material is charge coupled to the semiconductor and spaces and electrically insulated the semiconductor and spaces and electrically insulates the semiconductor from a gate electrode disposed between the source and the drain. Application of a voltage to the source and drain and of a constant voltage to the gate and source causes a current flow which is a function of the stress-strain to which the piezoelectric material is subjected and can thus be employed to indicate the magnitude of such stress-strain.

3,585,416

PHOTOPIEZOELECTRIC TRANSDUCER

Howard G. Mellen, 60 Minton Ave., Chatham, N.J. 07928

Filed Oct. 7, 1969, Ser. No. 864,368
Int. Cl. H01v *7/00*
U.S. Cl. 310—8.1 **10 Claims**

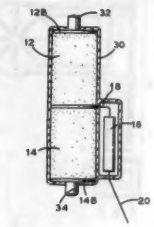


A piezoelectric bender transducer in combination with a photovoltaic cell in place of the electrodes.

3,585,417
PIEZOELECTRIC DEVICE HAVING A RESISTOR AND A PLASTIC INSULATING CASING

Ralph K. Helfen, Chicago, Ill., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Mar. 6, 1969, Ser. No. 804,860
Int. Cl. H01v 7/00
U.S. Cl. 310—8.2 2 Claims



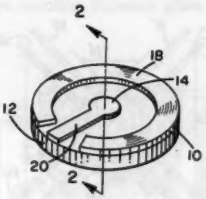
Two ceramic rods, made from a piezoelectric material are mounted end-to-end in a high impact glass-filled plastic case. The rods are precision machined to close tolerances at the ends, then silver electroded on those ends, and then polarized at high voltage to establish two poles of opposite polarity at the opposite ends of each rod. The two rods are placed in coaxial end-to-end relation, with the ends of like polarity placed in butting relation. An impact force applied at the end of one of the two rods, when thus positioned, causes a high voltage electrical current to be generated across the respective electrodes. Mechanically, the rods are compressed in series relationship by the applied mechanical impact force, each rod being stressed practically to the same value. Electrically, the rods are operating in parallel between the two outer ends of the same polarity, and the two inner ends, which are engaged through a metallic terminal tab, that serves as a terminal for the two-rod assembly. This parallel arrangement of the two rods doubles the current that would be available from a single rod, and produces a hot spark. The two outer ends of the rods, as assembled, are of the same polarity and they are, preferably, connected to ground, which may be the casing in which the ignitor is disposed. The two middle ends are in contact with a center terminal tab which is connected to one end of a resistor, the other end of the resistor being provided with an electrode whose free end is disposed to define one end of a gap in space where the gaseous vapor is to be ignited to provide the flame for the lighter or other device. The resistor is designed for high voltage operation and is suitably insulated, except for the outer end of its terminal, which is otherwise suitably disposed in the lighter casing that will be inaccessible to the finger of the human hand which is operating the lighter. The discharge of current from the compressed rods is, essentially, a condenser discharge which is limited in duration only by the impedance of the discharge circuit. The provision of the resistor assures delay to permit sufficient ionization time in the vapor to establish arcing and ignition of the vapor.

3,585,418
PIEZOELECTRIC RESONATORS AND METHOD OF TUNING THE SAME

Donald J. Koneval, Lyndhurst, Ohio, assignor to Clevite Corporation

Filed July 22, 1969, Ser. No. 843,438
Int. Cl. Holv 7/00
U.S. Cl. 310—8.2 4 Claims

There is disclosed a high frequency piezoelectric resonator having an electroded region and a surrounding nonelectroded region, said resonator having means for suppressing spurious responses comprising a layer of nonabsorbent, insulating and high Q material, said layer being deposited on said nonelectroded region in a collarlike configuration. Also, said

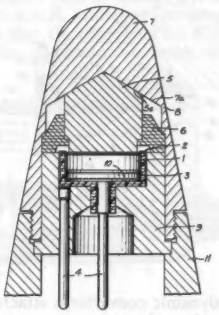


layer has been shown to serve as an effective means for fine-tuning piezoelectric resonators.

3,585,419
IMPACT-OPERATED ELECTRICITY GENERATOR FOR PROJECTILES

Francis Albert Daniel Andre, Bourges, France, assignor to ETAT Francais, Paris, France

Filed Dec. 18, 1969, Ser. No. 886,201
Claims priority, application France, Dec. 19, 1968, 179,258
Int. Cl. H01v 7/00
U.S. Cl. 310—8.4 10 Claims



An electrical current generator for projectiles which is operated by impact. A cap is mounted so as to transfer direct forces to a striker which in turn compresses a substance which responds by generating current. To accommodate indirect or angular forces, the cap is mounted for translatory displacement which by a camlike action is converted into axial displacement of the striker to compress said substance.

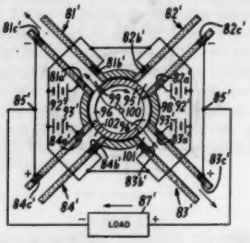
3,585,420
ALTERNATING CURRENT SYSTEMS EMPLOYING MULTIPLE ELECTROGASDYNAMIC DEVICES

Meredith C. Gourdine, West Orange, N.J., assignor to Gourdine Systems, Incorporated, Livingston, N.J.

Division of Ser. No. 601,270, Nov. 15, 1966, which is a continuation-in-part of application Ser. No. 512,083, Dec. 7, 1965, now abandoned. Filed June 30, 1969, Ser. No. 837,731
30, 1969, Ser. No. 837,731
Int. Cl. H02n 3/00
U.S. Cl. 310—10 1 Claim

Systems for effecting a conversion between the energies of a gas and electrical energy and employing at least two electrogasdynamic (EGD) devices each having ionizing electrodes and an output electrode for connection to an external circuit. Each EGD device is connected in series with the external circuit and the amount of electrical energy available for transfer to or from the circuit from each converter is periodically varied so that an alternating current potential is

maintained at the output electrode during operation. Periodic variation is achieved by varying an electrical ionizing source for the ionizing electrodes, or by varying gas flow through each EGD device.

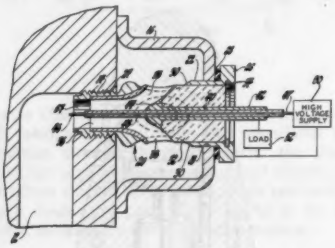


3,585,421

ELECTROGASDYNAMIC POWER DEVICE FOR A RECIPROCATING ENGINE

Nils L. Muench, Bloomfields Hills, and Charles B. Leffert, Troy, both of, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed July 15, 1969, Ser. No. 841,927
Int. Cl. H02n *3/00*
U.S. Cl. 310—10 **6 Claims**



An electrogasdynamic converter is attached to the exhaust port of an internal combustion reciprocating engine so that the exhaust gases assist in operation of the converter which produces a pulse of electrical energy for each pulse of exhaust gas. For a multicylinder engine, an EGD converter is provided for each cylinder and the converters are connected in parallel to produce a high voltage DC output or are connected in pairs with opposite polarities to provide a multiphase AC output.

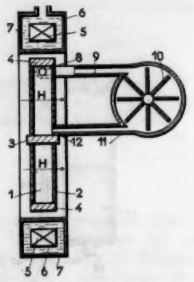
3,585,422

HOMOPOLAR DYNAMOELECTRIC MOTOR UTILIZING A MOVING, CONDUCTIVE FLUID

Pierre Burnier, St. Julien en Genevois, and Francois Berteaux, Laon, both of, France, assignors to Societe Generale, De Constructions Electriques Et Mechaniques Alsthom, Paris, France

Filed Dec. 4, 1969, Ser. No. 882,086
Claims priority, application France, Dec. 6, 1968, 177118
Int. Cl. H02n *4/02*
U.S. Cl. 310—11 **5 Claims**

To provide for electrical contact to conductive fluid circulating in a magnetic field, and power transfer between an output shaft and the circulating fluid (the power transfer direction depending upon whether the machine operates as a generator, or as a motor), a fluid-type housing of insulating material is provided to have the fluid circulating therein, electrically conductive zones are located in the housing to provide electrical connection, and rotating blades in the form of paddle wheels, or the like, sealed against the outside are placed in the moving, conductive fluid. In one form, the housing is formed of circular, insulating discs with conductive cylindrical end walls and a conductive center, around which a super conducting magnet is placed; fluid ducts lead off from the center and a peripheral region of the discs; to turn the paddle wheels; in another embodiment, a toroidal, ring-shaped conduit is formed with magnets placed staggered along the duct, with conductive zone on facing, opposite sides of the duct offset from the magnets, the rotor and its blades being located in a bulge formed in the duct and in mechanical driving power transfer relationship to fluid circulating around the toroidal ring duct.

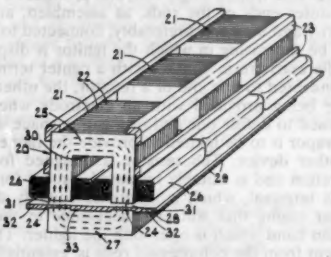


3,585,423

LINEAR INDUCTION MOTOR

Hugh Robert Bolton, London; Thomas George Fellows, Barnet; Eric Roberts Laithwaite, Ditton Hill; John Frederick Eastham, Long Ditton, all of, England, and Ernest Frederick Needham, Whittlesford, all of, England, assignors to Tracked Hovercraft Limited, London, England

Filed May 1, 1970, Ser. No. 33,596
Claims priority, application Great Britain, May 2, 1969, 22542/69
Int. Cl. H02k *41/04*
U.S. Cl. 310—13 **17 Claims**



A polyphase linear induction motor comprising a primary member having magnetic material formed with a polyphase winding and, for cooperating with the primary member, a secondary member comprising electrically conductive material backed by further magnetic material is so arranged that the working flux passes in low reluctance paths lying substantially in planes directed transversely of the motor. The depth of magnetic material required for a particular air gap flux density is therefore substantially independent of the pole pitch so that large pole pitches and hence high synchronous speeds can be achieved with tolerable depths of magnetic material. A particular application of the invention is to high speed transportation systems in which the secondary member forms part of the prepared track.

3,585,424

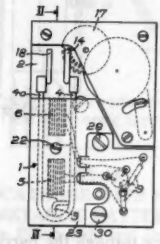
ELECTROMECHANICAL OSCILLATOR WITH FREQUENCY ADJUSTMENT MEANS

Maurice Jean Neel, Paris, France, assignor to Ste Jaz S. A., Paris, France

Continuation-in-part of application Ser. No. 680,909, Nov. 6, 1967, now abandoned. This application Jan. 28, 1970, Ser. No. 6,355

Int. Cl. H02k *33/02*

U.S. Cl. 310—25 7 Claims



A mechanical oscillator comprising a two-armed vibrator element, and electrical vibration sensing and actuating coils disposed between the arms of the vibrator. A magnet is movably disposed between the two coils for fine frequency adjustment and movable pieces are placed on both arms of the vibrator to permit coarse adjustment of frequency without requiring any removal of matter.

3,585,425

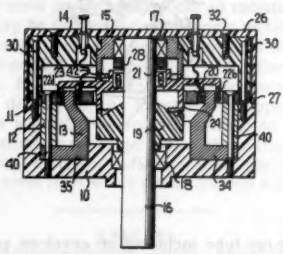
MOVING COIL STEP MOTOR

Harold R. Newell, South Newbury, N.H., assignor to Mesur-Matic Electronics Corporation, Warner, N.H.

Filed Sept. 25, 1969, Ser. No. 861,255

Int. Cl. H02k *37/00*

U.S. Cl. 310—49 13 Claims



A step motor in which a pair of normally spaced cooperating gears having confronting surfaces adapted for frictional engagement are forced into such engagement along a limited region thereof by electrical energization of one or more coils of a symmetrical array of coils coupled to one of the gears, the coils being positioned to interact with the magnetic field produced within permanent magnet pole gaps equal in number to the number of coils.

3,585,426

VIBRATION COMPENSATION FOR WOBBLE PLATE STEP MOTORS

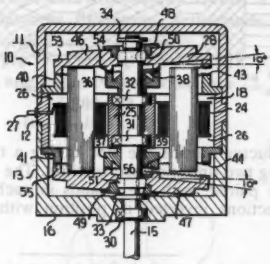
Harold R. Newell, South Newbury, N.H., assignor to Mesur-Matic Electronics Corporation, Warner, N.H.

Filed Oct. 6, 1969, Ser. No. 864,040

Int. Cl. H02k *37/00*

U.S. Cl. 310—49 11 Claims

A step motor has a wobble plate that wobbles about a shaft to produce meshing of circular gears fastened to the plate and to the shaft, respectively, in a sector that propagates about the entire length of the gears, under the influence of a stepping electromagnetic drive. The wobble plate is pivotally coupled to the shaft to undergo wobbling at an angle of inclination to the shaft that continuously rotates about the shaft, with relative rotation between plate and shaft occurring as a result of differing numbers of teeth on their respective gears. A second wobble plate identical to the first plate is pivotally coupled to the shaft at a point separated from the first wobble plate, and is associated with a set of gears identical to the first set of gears.



3,585,427

ELECTRONIC SPEED ARRANGEMENT FOR ELECTRICALLY OPERATED POWER TOOLS

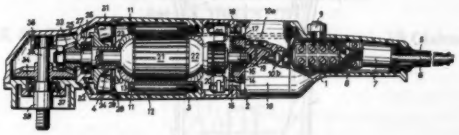
Kurt Paule, Stuttgart Oberturkheim, Germany, assignor to Robert Bosch G.m.b.H, Stuttgart, Germany

Filed May 19, 1969, Ser. No. 825,760

Claims priority, application Germany, May 18, 1968, P 17 63 390.8

Int. Cl. H02k *7/14*

U.S. Cl. 310—50 4 Claims



A speed control arrangement for electrically operated power tools in which an electronic control circuit within the housing of the tool regulates the speed between no-load and full-load operation of the tool, so that the speed is held substantially constant. The rotor of the motor within the tool is mounted in combination with bevel gears so as to form an angle polishing machine for portable applications. A terminal block mounted within the handle of the portable tool interconnects the wiring between the motor and the electronic controlling circuit. The electronic circuit provides for the operation of the tool from a single-phase utility outlet, and will disconnect the motor from the line when the maximum allowable speed is exceeded.

3,585,428

TRANSPOSED CONDUCTOR FOR DYNAMOELECTRIC MACHINES

Bernard J. Bennington, Monroeville, and William C. Brenner, Pittsburgh, both of, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

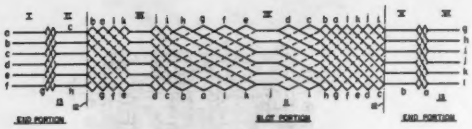
Filed Mar. 25, 1970, Ser. No. 22,475

Int. Cl. H02k *3/14*

U.S. Cl. 310—213 11 Claims

A transposed stranded conductor for dynamoelectric machines in which the transposition is incomplete in the slot portion of the conductor so that unbalanced strand voltages occur which balance the strand voltages occurring in the end portions of the conductor to minimize eddy current losses

and circulating currents and to minimize the tendency to nonuniformity of current distribution. This result is accomplished by providing untransposed sections in the conductor separated by transposed sections, each of the end portions of



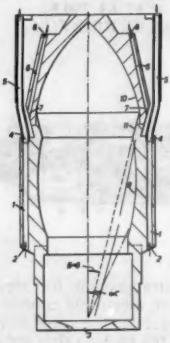
the conductor outside the slot having a transposed section separating two untransposed sections. The untransposed sections are paired, with the strands in each pair of untransposed sections inverted in position with respect to each other.

3,585,429

ELECTRON BEAM DISCHARGE TUBE HAVING A SHAPED COLLECTOR WITH A PLURALITY OF COOLING STAGES

Cian Noel O'Loughlin; Graham Cyril Thomas Ball, and Christopher John Edgcombe, all of Essex, England, assignors to English Electric Valve Company Limited, London, England

Filed Jan. 27, 1969, Ser. No. 794,251
Claims priority, application Great Britain, Feb. 16, 1968, 7,607/68
Int. Cl. H01j *1/42, 23/02*
U.S. Cl. 313—30 **9 Claims**



In an electron beam discharge tube a fluid cooled electron collector has two cooling conduit systems each cooling a different part of the length of the collector, the interior surface having three main portions. Two portions are curved when viewed in section and extend over the length of the cooling stages. The third portion forms a conically tapered step between the first two portions, and extends over the region between the two cooling stages. The interior surface is shaped so that this third portion is subject to a lower intensity of electron bombardment than the average intensity elsewhere.

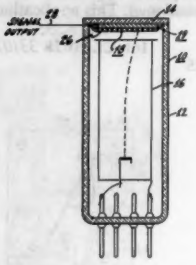
3,585,430

GALLIUM ARSENIDE PHOSPHIDE CAMERA TUBE TARGET HAVING A SEMI-INSULATING LAYER ON THE SCANNED SURFACE

Ralph E. Simon, Trenton, and Robert L. Rodgers, Pennington, both, N.J., assignors to RCA Corporation

Filed Aug. 23, 1968, Ser. No. 754,850
Int. Cl. H01j *31/28;* H01l *15/06*
U.S. Cl. 313—65AB **15 Claims**

A continuous barrier single crystal $GaAs_{1-x}P_x$ vidicon target is provided with a thin semi-insulating layer of antimony trisulfide on its scanned side to prevent higher energy beam



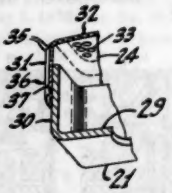
electrons from traveling through the barrier to a signal plate as dark current.

3,585,431

SHADOW-MASK CATHODE RAY TUBE INCLUDING A MASKING MEMBER COMPRISING A SKIRT HAVING INDENTATIONS AND PROJECTIONS OVERLAPPING AND ATTACHED TO A FRAME

Kenneth Adelpert Long, Lancaster, Pa., assignor to RCA Corporation

Filed June 15, 1970, Ser. No. 46,246
Int. Cl. H01j *1/96, 9/18, 29/46*
U.S. Cl. 313—85 **6 Claims**



A cathode-ray tube including an envelope comprising an outwardly domed generally rectangularly shaped faceplate, a phosphor screen disposed on the internal surface of said faceplate, means for projecting electrons towards the screen, and a generally rectangularly shaped shadow-mask assembly mounted adjacent to the screen in the path of the electrons. The mask assembly comprises a rigid metal frame and a metal masking member welded to the frame. The masking member includes a domed shadow mask integral with a peripheral skirt having a plurality of alternate projections and indentations, which may extend the length of the skirt substantially parallel to the longitudinal axis of the tube.

3,585,432

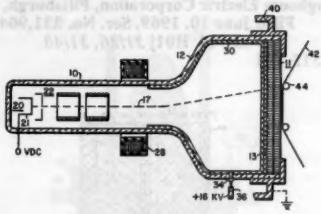
FACEPLATE MEANS FOR IMPROVING DIELECTRIC STRENGTH OF CATHODE-RAY TUBES

Albert E. Oberg, Horseheads, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 10, 1968, Ser. No. 782,598
Int. Cl. H01j *29/18*
U.S. Cl. 313—92LF **3 Claims**

The invention is a multiple element faceplate assembly for cathode-ray tubes for increasing the dielectric strength of the faceplate and thereby eliminate voltage breakdown across

the faceplate. A second faceplate is coupled to the fiber optic faceplate of a cathode-ray tube to compensate for flaws in



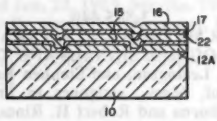
the fiber optic faceplate which reduce the dielectric strength between surfaces of the fiber optic faceplate.

3,585,433

MASKED PHOTOCATHODE WITH FIRST AND SECOND METALLIC PATTERNS

Terence W. O'Keefe, Pittsburgh, and Jerome R. Morris, Trafford, both of, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 18, 1968, Ser. No. 784,801
Int. Cl. H01j *39/16*
U.S. Cl. 313—94 **2 Claims**



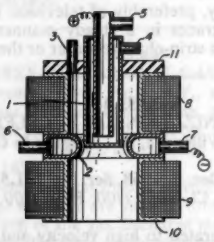
A masked photocathode is provided having on a radiation transmissive support a mask pattern of a material that absorbs or reflects sensitizing radiation, particularly in the ultraviolet. In one form, the mask is formed in a process that includes at least partial oxidation of a metal layer pattern. Alternatively, a mask pattern that blocks all radiation with high reflectivity may be formed by employing a metal with a subsequent insulating layer, such as of an oxide of the metal or a separately deposited insulator, for protection from the photocathode. In another form the photoemissive layer may be deposited directly on the transmissive support and have on its surface a pattern of organic material to provide the mask for electrons on the target side of the cathode as well as to prevent any radiation reflected from the target from impinging on areas from which photoemission is not desired.

3,585,434

PLASMA JET GENERATING APPARATUS

Yomei Kato, Hitachi-shi; Takashi Omori, Kita-ibaraki-shi, and Shigeru Kajiyama, Hitachi-shi, all of, Japan, assignors to Hitachi, Ltd., Tokyo-to, Japan

Filed Jan. 21, 1969, Ser. No. 792,652
Claims priority, application Japan, Jan. 24, 1968, 43/3742
Int. Cl. H01j *17/14, 17/26*
U.S. Cl. 313—161 **7 Claims**



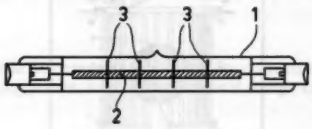
A plasma jet generating apparatus comprising a cathode formed of an annular electrode and an anode formed of a cylindrical electrode inserted at the central portion of said annular cathode wherein an arc is generated between the electrodes to heat a gas to a high temperature.

3,585,435

ELECTRIC INCANDESCENT LAMP

Germain Remi T'Jampens, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed June 17, 1969, Ser. No. 834,099
Claims priority, application Netherlands, June 22, 1968, 6,808,844
Int. Cl. H01k *1/50*
U.S. Cl. 313—174 **2 Claims**



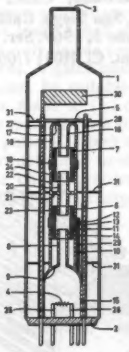
A regenerative cycle electric incandescent lamp which contains tribromosilane and an inert gas as a transport gas. The lamp, which has a lifetime up to 250 hours with an efficiency of 20 lumens per watt, remains bright until the end of its life.

3,585,436

LOW-PRESSURE GAS-DISCHARGE LAMP FOR PRODUCING RESONANCE RADIATION

Louis Benjamin Beijer, and Johannes Adrianus Cornelis Jansen, both of Emmasingel, Eindhoven, Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.

Filed Apr. 23, 1969, Ser. No. 818,600
Int. Cl. H01j *61/10*
U.S. Cl. 313—206 **10 Claims**



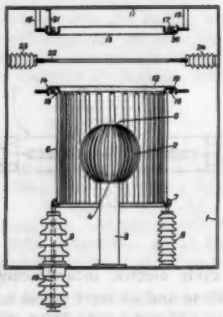
A low-pressure gas-discharge lamp for producing resonance radiation comprising two electrodes for a positive column discharge, and at least one cylindrical sputtering electrode coaxially surrounding the column discharge. The sputtering electrode has a step-shaped collar and contains an element whose resonance radiation is desired. Inner and outer insulating tubes on both sides of the sputtering electrode restrict the resonance radiation to space within the sputtering electrode therefore providing a lamp of high intensity and very narrow spectral line profile.

3,585,437

SPARK GAP HAVING TWO ELECTRODES FORMED OF SPACED BARS ENCLOSED IN A CASING

Thor Erik Thorsteinsen, and Valter Larsson, both of Ludvika, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Nov. 27, 1968, Ser. No. 779,455
Claims priority, application Sweden, Dec. 6, 1967, 16,780/67
Int. Cl. H01j *1/46*
U.S. Cl. 313—307 9 Claims



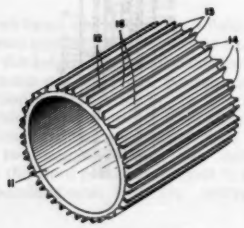
A spark gap is composed of inner and outer electrodes enclosed in a casing. The inner electrode is formed of spaced bars shaped as circular arcs and the outer electrodes of straight parallel bars. The bars of each of the electrodes are electrically connected to each other at one end and spaced apart at the other end.

3,585,438

CATHODE WITH ELECTRON BEAM CONFINING MEANS

Alexander Bell, Carlsbad, Calif., assignor to Stromberg Datagraphix, Inc., San Diego, Calif.

Filed June 3, 1969, Ser. No. 829,903
Int. Cl. H01j *1/00, 1/46*
U.S. Cl. 313—338 4 Claims



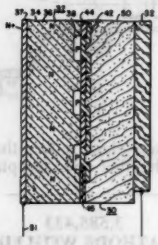
A cathode for an electron tube is described in which a plurality of coating strips of electron emissive material are distributed parallel with each other over the face of a base. Projecting means along opposite edges of each strip extend above the surface of the base and toward each other to form a gap for the passage of electrons. Also described are a method for making such a cathode, and a tool useful in performing the method of the invention.

3,585,439

A CAMERA TUBE WITH POROUS SWITCHING LAYER

Robert J. Schneeberger, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 10, 1969, Ser. No. 831,904
Int. Cl. H01j *31/26, 31/48*
U.S. Cl. 315—11 11 Claims



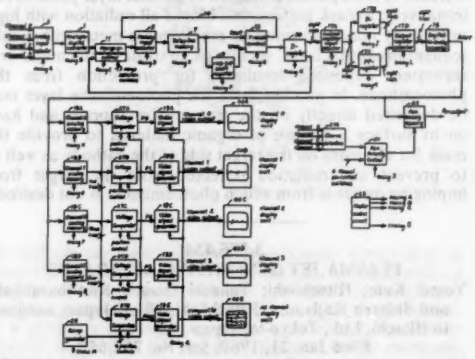
A camera tube in which input radiation information is directed onto a radiation-sensitive target or the input radiation is converted to electrons directed onto an electron-sensitive target and the information is read out from the opposite side of the target by means of a high-energy electron beam.

3,585,440

MONITOR METHOD AND APPARATUS FOR PHYSIOLOGICAL SIGNALS AND THE LIKE

Francis Fan Lee, Lexington, and Stephen Kent Burns, Cambridge, both of, Mass., assignors to Francis Fan Lee; Stephen Kent Burns and Robert H. Rines, part interest to each

Filed Jan. 10, 1969, Ser. No. 790,216
Int. Cl. H01j *29/70*
U.S. Cl. 315—19 17 Claims



This disclosure deals with a monitor providing an oscilloscope like display, preferably of television raster type, for presenting signal traces in a steady manner resembling a televised image of a strip-chart recorder or the like.

3,585,441

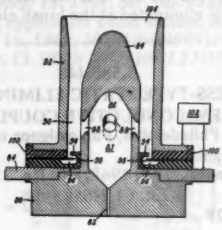
SHOCK IONIZATION GAS ACCELERATOR

Aldo V. LaRocca, Villanova, Pa., assignor to General Electric Company

Filed Dec. 5, 1968, Ser. No. 781,529
Int. Cl. H05h *1/00*; F03h *1/00*
U.S. Cl. 315—111 2 Claims

Gas to be accelerated to high velocity and ejected is first accelerated to velocity sufficient to cause compression and possible ionization when gas is directed against backwall or breech of main discharge chamber. Main discharge elec-

trodes produce high-energy discharge through gas, accelerating it both by thermal expansion and by electromagnetic forces; gas is then discharged through conventional nozzle.

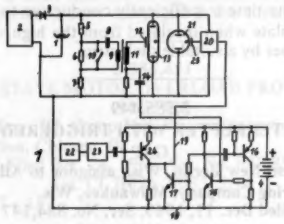


Length of flow paths may be such that device is acoustically self-pulsing with continuously supplied gas pressure and electrical potential.

3,585,442
FLASHLAMP CIRCUIT HAVING AUTOMATIC LIGHT TERMINATION MEANS

Achim Krusche, Wendezelle, and Horst Rohmann, Braunschweig, Germany, assignors to Rollei-Werke Franke & Heidecke, Braunschweig, Germany

Filed Jan. 27, 1969, Ser. No. 794,193
Claims priority, application Germany, Feb. 7, 1968, P 16 22 324.8
Int. Cl. G01j 1/46; H05b 41/32
U.S. Cl. 315—151 **9 Claims**



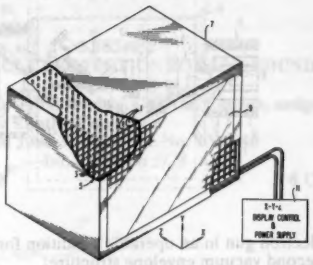
A flash tube has its flash extinguished by operation of a quench tube or switch tube which, when operated, short circuits the flash tube. The quench tube is set into operation (to stop the flash of the flash tube) by photoelectric measuring means responsive to the light reflected from the subject being photographed, when such reflected light reaches a threshold value. To avoid undesired short circuiting by operation of the quench tube as a result of light originating at some other flash apparatus located nearby, rather than the flash apparatus which the photographer desires to use, the circuit for igniting the quench tube is interconnected to the circuit of the flash tube so that the quench tube cannot be ignited except while the flash tube is flashing. This avoids undesired short circuiting discharge of the capacitor which powers the flash of the flash tube.

3,585,443
THREE-DIMENSIONAL GAS PANEL

George M. Krembs, Hyde Park, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 10, 1969, Ser. No. 831,979
Int. Cl. H05b 37/00
U.S. Cl. 315—169R **3 Claims**

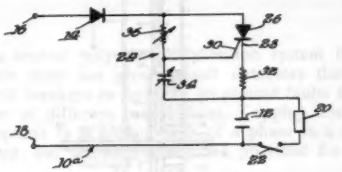
A three-dimensional gas display device wherein a plurality of gas discharge matrices are stacked forming a three-dimensional array. Each of the gas discharge matrices is formed by two planes of parallel glass enclosed wires, the glass enclosed wires of one plane running perpendicular to the other plane of glass enclosed wires. A gaseous element is placed between the parallel planes of glass wires. Means are provided for applying a potential difference between the two wires intersecting at any point in the three-dimensional array causing a continuous electric discharge at this point. By correctly selecting the intersecting points, a three-dimensional design can be displayed.



3,585,444
ENERGY SUPPLY CIRCUIT

Paul E. Crowley, Naperville, and James B. White, Geneva, both of, Ill., assignors to Don Haskins, Inc., Geneva, Ill.

Filed Sept. 23, 1968, Ser. No. 761,706
Int. Cl. H05b 37/00
U.S. Cl. 315—240 **9 Claims**



A circuit for supplying a high energy discharge to a load, for example a strobotron. A capacitor is adapted to be charged from an alternating current source and to discharge its stored energy into the load. A half-wave rectifier permits charging of the capacitor only during each half-cycle forward pulse of the source current. A gated conductive device in series with the capacitor can, by suitable control of the gate and cathode voltages, be made to (1) delay the delivery of charging current to the capacitor for a finite interval after initiation of the half-cycle pulse, (2) limit the maximum instantaneous charging current delivered to the capacitor, and/or (3) increase the average charging current delivered to the capacitor as the latter accumulates charge.

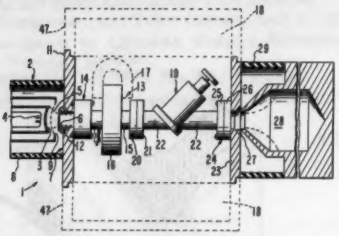
3,585,445
METHOD FOR PRESERVING ELECTRON GUN ASSEMBLIES

George V. Miram, Daly City, and Samuel W. Woolsey, Los Altos, both of, Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed Mar. 3, 1969, Ser. No. 803,774
Int. Cl. H01j 9/00
U.S. Cl. 316—1 **4 Claims**

A method for preserving electron gun assemblies is disclosed. In the method, an electron gun assembly, including a thermionic cathode emitter, is assembled in a vacuum envelope structure. The envelope is evacuated, baked out, and the cathode processed in the conventional manner to activate the cathode. Beam voltages are applied to draw beam current from the gun to test proper operation thereof. These tests may include a test of beam diameter and permeance in the presence of a beam focusing magnetic or electric field. The processed and tested electron gun is then valved off from the rest of the envelope by means of a valve connected to the en-

velope portion including the electron gun. The valved-off gun is then detached from the vacuum envelope for preserving



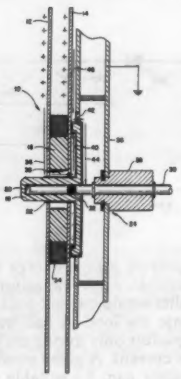
the electron gun in an operable condition for subsequent use in a second vacuum envelope structure.

3,585,446

MEANS FOR PREVENTION OF STATIC ELECTRIC DISCHARGE ON MOTION-PICTURE PROJECTOR REELS

Edward S. McKee, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 19, 1969, Ser. No. 800,578
Int. Cl. H05f *3/00, 3/02*
U.S. Cl. 317—2 **2 Claims**



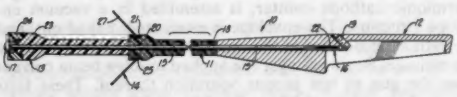
This disclosure relates to a structure used to prevent the buildup of high voltage static electric charge on the flanges or support hub of motion picture reels. A conductive coating is placed around the nonconductive areas of the connection between the flanges and ground potential so that the accumulation of discharge potentials is prevented.

3,585,447

STATIC DISCHARGE APPARATUS

William K. McLain, Orange County, Calif., assignor to Alice Richmond McLain, Orange County, Calif.

Filed Nov. 10, 1969, Ser. No. 875,435
Int. Cl. H05f *3/04;* **B64d** *45/02*
U.S. Cl. 317—2 **8 Claims**



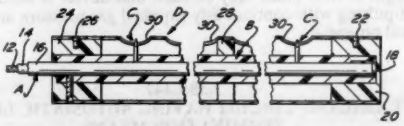
An elongated, low resistance, rodlike element has one end connected to an external aircraft part and its other end terminating in a spherical electrode. A relatively high resistance coating covers the rodlike element throughout a substantial part of its length from the connected end and terminates in a conductive brush electrode. High level static charge on the aircraft is dissipated via the spherical electrode, whereas low level charges are eliminated at the brush electrode.

3,585,448

SHOCKLESS-TYPE STATIC ELIMINATOR WITH SEMICONDUCTIVE COUPLING

Dolph Simons, Philadelphia, Pa., assignor to The Simco Company, Inc., Lansdale, Pa.

Filed Aug. 14, 1968, Ser. No. 752,697
Int. Cl. H05f *3/00*
U.S. Cl. 317—2F **10 Claims**



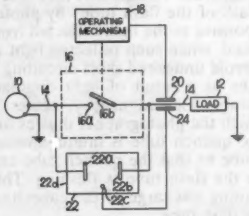
A shockless-type static eliminator in which a semiconductive sheath is employed to support and capacitatively couple a plurality of spaced conductive discharge points to a conductive member having an alternating current high voltage connected thereto. The semiconductive sheath acts as a high resistance series element between adjacent discharge points but at the same time is sufficiently conductive to function as a condenser plate when insulated from the high voltage conductive member by a suitable dielectric.

3,585,449

CIRCUIT INTERRUPTER WITH TRIGGERED VACUUM GAP

Rolf Dethlefsen, New Berlin, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Dec. 11, 1969, Ser. No. 884,147
Int. Cl. H02h *7/22*
U.S. Cl. 317—11 **7 Claims**

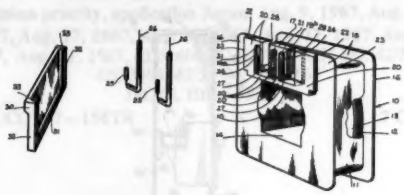


An electrical system in which a current zero occurs comprises a pair of circuit breaker contacts between which an arc is established during contact separation. A triggerable vacuum gap is arranged in parallel with the separable contacts and means responsive to system conditions trigger the gap and cause it to break down while arcing occurs between the contacts but shortly before current zero thereby starving the circuit breaker arc and permitting rapid extinction of the spark gap arc.

3,585,450
BOBBIN ASSEMBLIES

Norman Lane, Halesowen, England, assignor to BSR Limited, Cradley Heath, Warley, England

Filed Aug. 12, 1969, Ser. No. 852,529
Claims priority, application Great Britain, Aug. 16, 1968, Oct. 16, 1968, 39246/68;49091/68
Int. Cl. H02h 7/00; H01f 27/30
U.S. Cl. 317—13 10 Claims

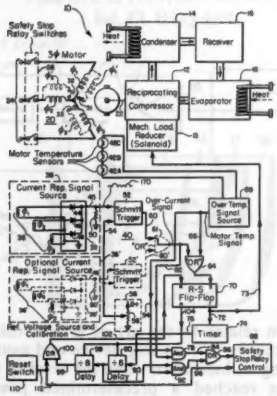


A bobbin assembly comprising a bobbin having an axial core passage and flanges at each end of the bobbin with a coil of wire wound round the bobbin between the flanges and a housing formed on one or more of the flanges and provided with recesses within which the ends of the coil and the ends of power supply leads can be engaged together with a sleeve crimping the ends together. A fuse may be mounted in a further passage formed in the bobbin and extending parallel to the core passage and the housing may be provided with recesses to receive sleeves, crimping the ends of the fuse to an end of the wire of the coil and to a power supply lead. In both cases a cover is engaged with the housing and the arrangement is such that the cover cannot be removed from the housing when a core is engaged in the core passage.

3,585,451
SOLID STATE MOTOR OVERLOAD PROTECTION SYSTEM

Arthur R. Day, III, Camp Hill, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 24, 1969, Ser. No. 887,857
Int. Cl. H02h 7/085, 3/10
U.S. Cl. 317—13 11 Claims

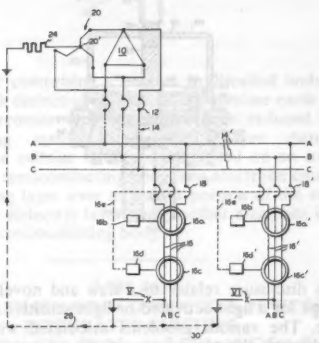


A solid state overload protection system for protecting a polyphase electric motor which drives a reciprocating- or positive-displacement type compressor of the type having mechanical load reducing means is disclosed. The system samples the peak current drawn by each phase of the electric motor and the temperature of the motor windings. During overload (overcurrent or overtemperature) situations, a mechanical load reducer is latchably operated to reduce the motor loading. If the overload condition persists (e.g. for 6 seconds) after the load reduction has occurred the current to the motor is interrupted. Otherwise, the motor is reloaded after a longer period (of, e.g., 6½ minutes).

3,585,452
GROUND FAULT PROTECTION FOR UNGROUNDED SYSTEMS

Anatole J. Goodwin, Willowdale, Ontario, Canada, assignor to Federal Pacific Electric Company

Filed June 3, 1968, Ser. No. 733,840
Int. Cl. H02h 3/28
U.S. Cl. 317—18 6 Claims

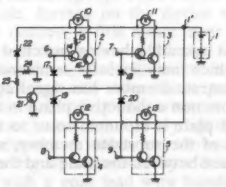


A floating-neutral polyphase distribution system having plural branch lines has ground fault detectors that trip branch-circuit breakers in response to ground faults in different phases of different branch lines. Tripping does not occur in response to a ground fault of a phase in a single branch circuit, but warning signals are provided for such faults.

3,585,453
DEVICE FOR PROTECTING ELECTRICAL LOAD OF AUTOMOTIVE VEHICLES

Hisashi Kawai, Toyohashi-shi, Japan, assignor to Nippon Denso Company Limited, Kariya-shi, Japan

Filed May 21, 1969, Ser. No. 826,530
Claims priority, application Japan, June 27, 1968, 43/45340
Int. Cl. H02h 3/20
U.S. Cl. 317—31 4 Claims



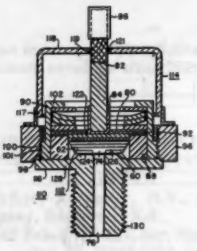
A device for protecting an electrical load of an automotive vehicle comprising a Zener diode connected to the output terminal of a power source circuit of the automotive vehicle, a switching circuit including a semiconductor element connected to said Zener diode so that said semiconductor element operates in response to flow of current across said Zener diode, and a control circuit for the electrical load such as a lamp, said control circuit having its input terminal connected to the output terminal of said switching circuit. In the device, an unusually high voltage generated in the power source circuit is instantaneously detected by the Zener diode

and the switching circuit is thereby operated to forcedly cut off the control circuit for the electrical load so as to prevent any damage to the electrical load.

3,585,454
IMPROVED CASE MEMBER FOR A LIGHT ACTIVATED SEMICONDUCTOR DEVICE

John S. Roberts, Export, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 1, 1969, Ser. No. 811,866
Int. Cl. H01 *3/00, 5/00*
U.S. Cl. 317—234R **1 Claim**

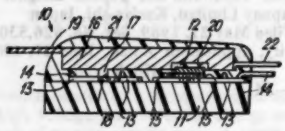


This disclosure relates to a new and novel encapsulating package for a light activated or light sensitive semiconductor device. The various problems associated with introducing light through the top or cap of the encapsulating case are overcome by introducing light through an aperture in the base member of the case.

3,585,455
CIRCUIT ASSEMBLIES

Ronald Naylor, Cheadle, England, assignor to Ferranti, Limited

Filed Jan. 23, 1969, Ser. No. 793,444
Claims priority, application Great Britain, Jan. 26, 1968, 4093/68
Int. Cl. H05k *1/04*
U.S. Cl. 317—101 **14 Claims**



In a circuit assembly having matched signal transmission lines, and which may include semiconductor devices, one face of a substrate member has signal conductors cooperating with a common conductive plane in the form of a metal plate and the plate is mounted so as to span the conductor-bearing face of the substrate member, a dielectric medium filling the space between the plate and the conductors.

3,585,456
ELECTRIC SERVICE CENTER FOR MOBILE HOMES AND THE LIKE

Lawrence Phillips, Jr., 840 Inverness, Pasadena, Calif.

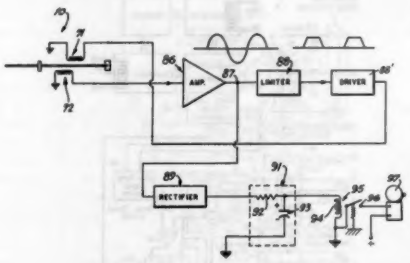
Continuation-in-part of application Ser. No. 693,245, Dec. 26, 1967, now abandoned. This application Oct. 17, 1969, Ser. No. 868,291
Int. Cl. H02b *1/04*
U.S. Cl. 317—112 **15 Claims**

The electric service center has a housing adapted to extend a predetermined distance above its installation in the ground to provide electrical service to mobile homes and the like. The housing is adapted to receive a removable plate which carries one or more plug receptacles and one or more circuit breakers. A neutral connection is also carried by the plate. The plug receptacle, circuit breaker and neutral connection are electrically coupled together. When secured to the housing, the plate's circuit breaker and neutral connection are electrically coupled to a source of power through bus bars. The service ampere rating is changed by removing the plate and substituting a plate having a plug receptacle, neutral connection and a circuit breaker with the desired rating. An alternate embodiment provides sidewalls on either side of each plate to protect the plate's circuit breaker, neutral connection and plug receptacle. A rain guard is also provided on each plate to protect its circuit breaker and plug receptacle. Bus bars within the housing are disposed in rigid tubes to prevent inadvertent contact of the bus bars with, for example, the sidewalls of the plates. An insulating sheet in the housing between the bus bars and the opening in the housing for the removable plates provides further protection for a user.

3,585,457
MATERIAL LEVEL SENSING DEVICE AND INDICATING SYSTEM

Carl J. Zaander, Clarendon Hills, Ill., assignor to Fuller Company

Filed May 1, 1969, Ser. No. 820,919
Int. Cl. G01n *11/02;* **H02k** *33/00*
U.S. Cl. 317—123 **24 Claims**



This invention relates to the art of level sensing devices and more particularly to a sensing device and associated circuit for providing an indication when the level of material in a chamber has reached a predetermined position. The sensing device comprises a vibratory reed of length substantially equal to three-quarters of a wavelength and resiliently mounted at two points substantially one-half wavelength apart and projecting from one of said resilient mounts by a distance of substantially one-quarter of a wavelength, the reed having associated drive and pickup coils which are in an oscillatory circuit including an amplifier and a limiter, the latter determining the maximum drive potential applied to the drive coils, the circuit including a control device adapted

to be actuated when the signal fed thereto from the amplifier falls a predetermined amount below a reference level of value proportional to the maximum output from the limiter.

3,585,458

ELECTROMAGNETIC INDUCTION RESPONSIVE DEVICE

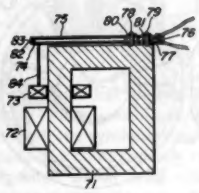
Koichi Yoshimura, Kadoma-shi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 1, 1968, Ser. No. 749,477

Claims priority, application Japan, Aug. 9, 1967, Aug. 17, 1967, Aug. 17, 1967, Aug. 17, 1967, Aug. 17, 1967, Aug. 17, 1967, Aug. 21, 1967, 42/51606; 42/53399; 42/53400; 42/53401; 42/53403; 42/53404; 42/54164

Int. Cl. H01h *53/015*

U.S. Cl. 317—156TR 7 Claims



An electromagnetic induction responsive device adapted for closing or opening a contact mechanism and driving a brake shoe, clutch or the like, wherein no movable core is provided, and electric power induced from a primary coil into a secondary coil is utilized to cause an electromagnetic force to occur in the coils.

3,585,459

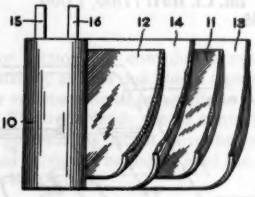
CAPACITOR WITH ELECTROLYTE COMPRISING BORIC ACID AND PENTANEDIOL

Reginald G. Hills, North Adams, Mass., and Robert W. Santway, Bennington, Vt., assignors to Spraque Electric Company, North Adams, Mass.

Filed Oct. 2, 1969, Ser. No. 863,136

Int. Cl. H01g *9/00*

U.S. Cl. 317—230 14 Claims



An electrolytic capacitor has a capacitor section having a plurality of electrodes, at least one electrode of which is a valve metal having on its surface an insulating oxide layer, said section being impregnated with an electrolyte. The electrolyte comprises a solvent and an ionogen of a mixture of boric acid and a pentanediol, wherein the mol ratio of boric acid to said pentanediol is between about 0.2–2.

3,585,460

MINIATURE CERAMIC CAPACITOR AND METHOD OF MANUFACTURE

William Herman Liederbach, Carmel, Ind., and Bernard Schwartz, Poughkeepsie, N.Y., assignors to RCA Corporation

Filed Nov. 10, 1969, Ser. No. 875,447

Int. Cl. H01g *3/06*

U.S. Cl. 317—230 5 Claims

A capacitor comprising a porous, multicelled body composed of a high dielectric ceramic of the alkaline earth metal-titanate or zirconate type which has been reduced to the semiconducting state, a dielectric layer distributed throughout the cellular structure composed on an oxidized portion of the semiconducting body, one electrode composed of a conducting layer over at least a portion of the exterior surface of the dielectric layer, and another electrode in contact with the semiconducting body.

3,585,461

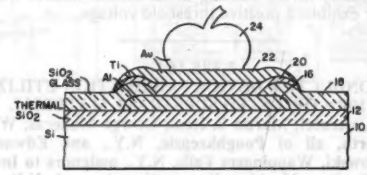
HIGH RELIABILITY SEMICONDUCTIVE DEVICES AND INTEGRATED CIRCUITS

Robert T. Eynon, Glen Burnie, and Richard Criswell Grace, Woodlawn, both of, Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 19, 1968, Ser. No. 706,290

Int. Cl. H01l *1/14*

U.S. Cl. 317—234 1 Claim



A metallization process and structure for semiconductive devices and integrated circuits with a high degree of protection against impurities affecting device characteristics is provided having a first insulating layer, such as one of thermally grown silicon dioxide, formed on the device with openings where contacts are desired, a first metal layer forming contacts and interconnections between selected contacts of a metal such as aluminum, a second dielectric layer such as a glass layer with openings only over those portions of the previous metal layer in bonding pad areas, a second metal layer of a material, such as titanium, very tightly adherent to the glass dielectric deposited within and around the opening of the second insulating layer covered by a third metal layer preferably of gold with a gold lead wire bonded thereto or other means for external connection.

3,585,462

SEMICONDUCTIVE MAGNETIC TRANSDUCER

Kurt Lehovec, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

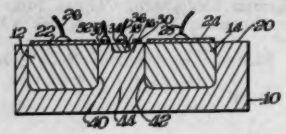
Filed Nov. 13, 1968, Ser. No. 775,240

Int. Cl. H01l *11/00*

U.S. Cl. 317—235 11 Claims

A region for injection of minority carriers is provided at one end of an extended semiconductive channel which is contiguous along one side with a collector region, and an

electric field is provided in the channel such that a magnetic field applied substantially perpendicular to the channel



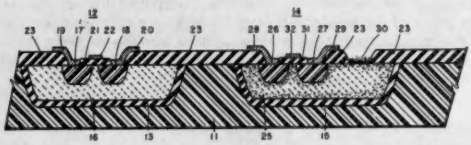
preferentially deflects minority carriers to or from the collector.

3,585,463

COMPLEMENTARY ENHANCEMENT TYPE MOS TRANSISTORS

Paul Richman, Bayside, N.Y., assignor to General Telephone & Electronics Laboratories, Incorporated

Filed Nov. 25, 1968, Ser. No. 788,379
Int. Cl. H01l *11/14, 19/00*
U.S. Cl. 317—235R **6 Claims**



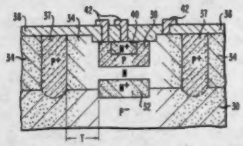
Complementary P-channel enhancement-type MOS transistors are provided on the same conductivity type bulk starting material. The N-channel transistors are dielectrically isolated from the P-channel transistors to minimize bulk leakage currents and to permit gold doping of the N-channel units. The gold is diffused into the top surface of the N-channel units at a point remote from the channel to the limit of its solid solubility in the starting material and insures that the transistor exhibits a positive threshold voltage.

3,585,464

SEMICONDUCTOR DEVICE FABRICATION UTILIZING <100> ORIENTED SUBSTRATE MATERIAL

Paul P. Castrucci; Martin S. Hess; George Maheras; William D. North, all of Poughkeepsie, N.Y., and Edward G. Grochowski, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 19, 1967, Ser. No. 676,451
Int. Cl. H01l *19/00*
U.S. Cl. 317—235 **6 Claims**



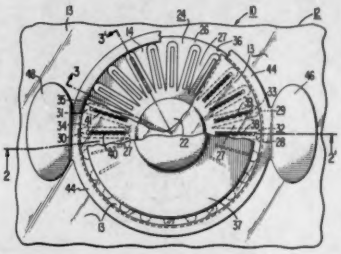
A semiconductor device and a method for fabricating the same which is composed of a monocrystalline semiconductor body having a surface crystallographic orientation substantially parallel to a <100> plane and having a PN junction formed in the body. The body has an insulator coating, such as silicon dioxide, over the PN junction. The surface state density at the semiconductor-insulator interface is very low. This low density is believed to be a reason for the increased beta in the <100> oriented material semiconductor device. Further, the device has a low defect density and few dopant precipitate sites even at high dopant levels. A monolithic integrated circuit structure composed of the monocrystalline semiconductor substrate having a surface crystallographic orientation substantially parallel to a <100> plane with a plurality of semiconductor devices within the substrate is described. The devices are isolated from one another by PN junctions. The tolerance in a given isolated device, between the PN junction and the nearest region having a different conductivity is less than approximately 0.3 mils. This very close spacing allows substantially greater compactness of semiconductor devices within a monocrystalline semiconductor body than has ever been previously accomplished.

3,585,465

MICROWAVE POWER TRANSISTOR WITH A BASE REGION HAVING LOW-AND-HIGH-CONDUCTIVITY PORTIONS

William Paul Imhauser, Somerville, N.J., assignor to RCA Corporation

Filed Feb. 20, 1970, Ser. No. 13,026
Int. Cl. H02l *5/00*
U.S. Cl. 317—235R **6 Claims**



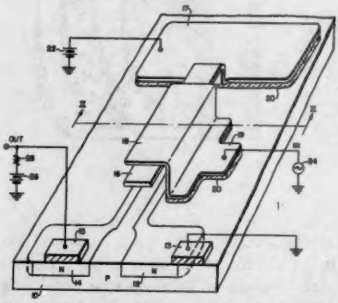
The device includes a plurality of oblong base lobes radially disposed about a central collector portion, with a thin emitter region centrally diffused within each oblong base lobe. The base region of each device also includes a high conductivity region comprising an outer peripheral ring around the lobes and wedge-shaped portions which taper inward towards the central portion and between adjacent oblong base lobes, providing good current injection uniformity along the emitter-base junction. Emitter interconnection is made by means of a metal film disposed over an oxide layer having apertures exposing the emitter region; base interconnection is made by means of a metal ring disposed around the outer peripheral ring of the high conductivity region.

3,585,466

RESONANT GATE TRANSISTOR WITH IMPROVED GAIN HAVING A VIBRATORY MEMBER DISPOSED IN A SPACED RELATIONSHIP BETWEEN A FIELD RESPONSIVE MEMBER AND A FIELD PLATE

John R. Davis, Jr., Export, and Terence R. Kiggins, Latrobe, both of, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 10, 1968, Ser. No. 782,600
Int. Cl. H01l *11/00, 15/00*
U.S. Cl. 317—235 **5 Claims**



A resonant gate transistor with high gain is provided by a structure with a field plate oppositely disposed to the field

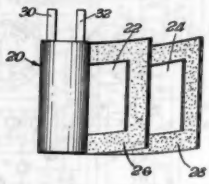
responsive means (such as a field effect transistor) in relation to the vibratory member positioned therebetween.

3,585,467

CAPACITOR WITH MICROSTIPPLED DIELECTRIC

Raynor Linzey, Stamford, Vt.; Paul H. Netherwood, Williamstown, Mass.; Herbert C. Craig, Stamford, Vt., and Andrew E. Dequasie, North Adams, Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Aug. 11, 1969, Ser. No. 849,097
Int. Cl. H01g *3/04, 3/175*
U.S. Cl. 317—258 **5 Claims**



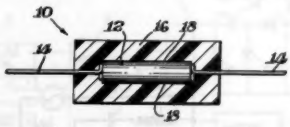
An electrical capacitor has at least a pair of metal electrodes convolutely wound with and the surfaces thereof separated by at least one synthetic resin dielectric film. The film is a composite of a comparatively smooth substrate having solvent deposited on at least one surface thereof a microstippling arrangement of a resin dielectric. The surface of the composite has a surface roughness equivalent in depth to from 10—40 percent of the thickness of said comparatively smooth film and has a frequency of peaks of from 50—3000 per centimeter. The capacitor is impregnated with a dielectric impregnant which is fluid at least at the time of impregnation.

3,585,468

THERMOPLASTIC JACKETED THERMOPLASTIC CAPACITOR

Sidney L. Chertok, Pittsfield, and David B. Peck, Williamstown, both of, Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Nov. 27, 1968, Ser. No. 779,414
Int. Cl. H01g *3/17*
U.S. Cl. 317—260 **6 Claims**



A capacitor section has convolutely wound metal electrodes separated by at least one film of a polyolefin dielectric material. The volume ratio of polyolefin to metal electrode is at least 3:2. Electrode leads are in contact with the electrodes. An encapsulating jacket surrounds and is thermally bonded to said section. The jacket is of the same species as that of the dielectric film.

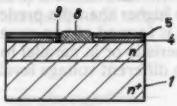
3,585,469

SCHOTTKY BARRIER SEMICONDUCTOR DEVICE

Hans Jager, Heilbronn(Neckar), and Wolodimir Kosak, Talheim, both of, Germany, assignors to Telefunken Patentverwertungsgesellschaft m.b.H, Ulm Denau, Germany

Filed June 20, 1968, Ser. No. 738,608
Claims priority, application Germany, June 22, 1967, Feb. 24, 1968, T 34153;T 35934
Int. Cl. H01l *9/00*
U.S. Cl. 317—234 **6 Claims**

A schottky-barrier diode and a method of making the same. The diode has a surface-type metal contact arranged on a semiconductor body forming a rectifying metal-semiconductor junction. The outer edge of the contact terminates abruptly and the rim portion of the contact tapers toward the outer edge.



ERRATUM

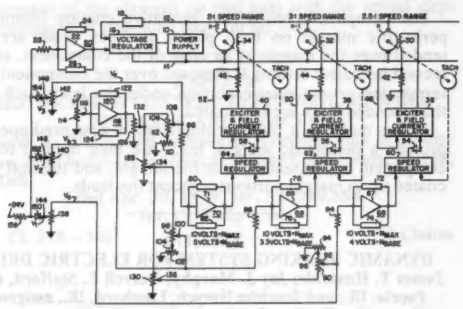
For Class 317—261 see:
Patent No. 3,585,472

3,585,470

AUTOMATIC BUS VOLTAGE ADJUSTMENT CONTROL SYSTEM

John J. Connors, West Seneca, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 8, 1969, Ser. No. 883,093
Int. Cl. H02p *7/70*
U.S. Cl. 318—53 **6 Claims**



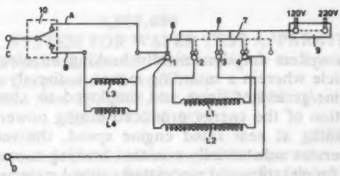
This disclosure relates to a system for providing automatic bus voltage adjustment control to enable an optimum bus voltage to be selected for a plurality of motors operated in parallel, in accordance with the speed selected for the lowest speed motor.

3,585,471

MULTIFREQUENCY, MULTI-VOLTAGE STATOR CIRCUITS FOR ALTERNATING CURRENT MOTORS

Edoardo Ecclesia, Ivrea (Torino), Italy, assignor to Ing. C. Olivetti & C., SpA, Ivrea (Torino), Italy

Filed June 3, 1969, Ser. No. 829,978
Claims priority, application Italy, June 7, 1968, 51950-A/68
Int. Cl. H02p *7/36*
U.S. Cl. 318—225 **3 Claims**



A stator circuit of an alternating current motor is provided with at least an additional winding which is serially con-

nected with the main stator winding when the motor is to be operated by a voltage at a predetermined frequency, and which may be bypassed through a manual switch as an additional inductance when the motor is to be operated by a voltage at a frequency higher than the predetermined frequency. The main winding is formed of two equal parts which can be connected either serially or in parallel to enable the motor to be operated at two different voltage levels.

3,585,472

COATED ELECTRICAL COMPONENT AND METHOD OF MANUFACTURING

John E. Dornfeld, Mequon; Sidney B. Williams, Cedarburg, and George A. Mantey, Grafton, all of, Wis., assignors to Sprague Electric Company, North Adams, Mass.

Filed Jan. 13, 1970, Ser. No. 2,587
Int. Cl. H01g *3/06*
U.S. Cl. 317—261 **8 Claims**

The component has a first insulative coating forming a perimetric margin on both planar surfaces, leads are extended over the margin at an edge of the component, and a second insulative coating is disposed over the component and terminated on the margin portion under the leads such that the extended leads are noncoated.

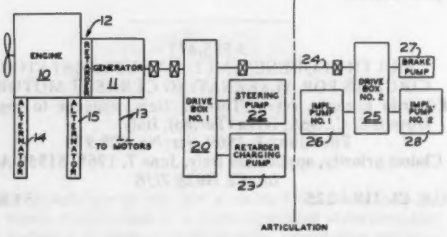
In the method, a planar component is first predipped to provide a perimetric margin, leads are then applied to the component and extended over the margin, and the unit then coated up to margin portions adjacent the leads.

3,585,473

DYNAMIC BRAKING SYSTEM FOR ELECTRIC DRIVE

James T. Huxtable; Jay J. Murphy; Darrell E. Stafford, all of Peoria, Ill., and Joachim Horsch, Lombard, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed July 14, 1969, Ser. No. 841,263
Int. Cl. H02p *5/22*
U.S. Cl. 318—140 **10 Claims**



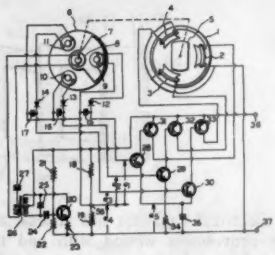
A system for dynamically braking an electrically driven vehicle wherein a retarding means is directly coupled to the engine/generator drive and employed to absorb the major portion of the energy produced during power regeneration. Running at near rated engine speed, the retarding means generates substantially constant braking torque during vehicle deceleration and associated control systems automatically operate the retarding means in response to command signals and employ circuits to maintain the excitation of generator below that of the wheel motors during retarding whereby better power transfer is effected.

3,585,474

ELECTRONIC COMMUTATING SYSTEM AND ELECTRONICALLY COMMUTATED MOTOR

Kazutsugu Kobayashi; Hisayuki Matsumoto, and Yoshiaki Igarashi, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 28, 1969, Ser. No. 803,218
Claims priority, application Japan, Feb. 29, 1968, 43/13741
Int. Cl. H02k *29/00*
U.S. Cl. 318—254 **5 Claims**



An electronic commutating system and an electronically commutated motor resulting therefrom. The electronic commutating system has no deadzone and no overlap despite an imperfect position detecting signal. The transition of the commutation is carried out in a differential manner. Any fluctuation in the operating temperature and/or deviation of the supply voltage does not disturb the commutation.

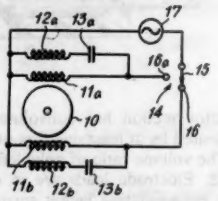
The electronically commutated motor utilizing said electronic commutating system starts properly and with a very small torque ripple. The motor also has a high efficiency.

3,585,475

TAPE FAST FEED CONTROL APPARATUS

Itsuki Ban, 829, Higashi-Oizumimachi, Nerima-ku, Tokyo-to, Japan

Filed Feb. 26, 1969, Ser. No. 802,572
Int. Cl. G05b *19/100;* **H02p** *7/54*
U.S. Cl. 318—305 **5 Claims**

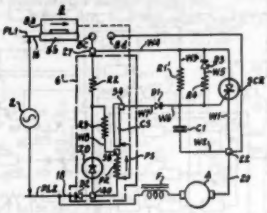


A tape fast feed control apparatus for an endless magnetic tape cartridge comprising an induction motor having two coils generating rotatory magnetic fields different to each other, changeover switch incorporated in an electric supply circuit for the induction motor for selecting one out of the two coils for energizing it, control means for controlling the operation of the changeover switch, said changeover switch being caused to be changed over to vary the feed speed of the tape from "normal" to "fast," said control means varying the feed speed of the tape from "fast" to "normal" in automatic manner.

3,585,476
TRIGGER SWITCH SPEED CONTROL UNIT WITH ELECTRICAL FEEDBACK

Walter L. Rutchik, Wauwatosa, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Continuation-in-part of application Ser. No. 709,593, Feb. 27, 1968, now abandoned. This application July 19, 1968, Ser. No. 746,120
Int. Cl. H02p 5/16
U.S. Cl. 318—331 20 Claims

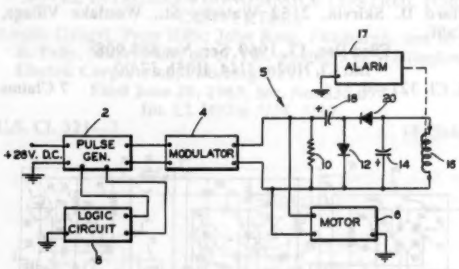


A self-enclosed trigger switch speed control unit interchangeably usable in place of a conventional trigger switch in the handle of a portable drill. The unit incorporates therewithin a solid state power control circuit of feedback-type responsive to trigger movement to provide continuously variable adjustment of the speed of a universal motor from zero speed through a predetermined usable speed range and responsive to motor counter e.m.f. as feedback affording stable speed regulation under varying load.

3,585,477
MOTOR SPEED CONTROL DEVICE INCLUDING FAIL SAFE MONITOR

George A. Shacknow, Wayne, N.J., assignor to The Bendix Corporation

Filed Dec. 16, 1968, Ser. No. 784,095
Int. Cl. G08b 21/00
U.S. Cl. 318—341 11 Claims



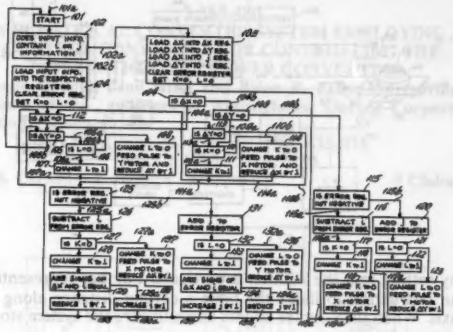
A monitor for motor speed control apparatus, and which apparatus affects control by applying pulses of varying frequency to the motor. If the controlling output is a steady state output or if there is an interval monitor failure, a relay is affected for actuating an alarm.

3,585,478
METHOD AND APPARATUS FOR DIGITAL CONTOURING USING STEPPING MOTORS WITH CLOSE APPROXIMATION OF DESIRED PATH

Albert C. Leenhouts, Harwinton, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Filed Jan. 23, 1970, Ser. No. 5,197
Int. Cl. G05b 19/24, 19/40
U.S. Cl. 318—573 12 Claims

A method and apparatus for producing relative movement of an element along two perpendicular axes to closely approximate a desired path with the movement consisting of sequential steps. The desired path may be straight or arcuate while the actual movement or path consists of steps along just the axes. The maximum error of the actual path from the desired path is caused to be less than the length of one step by having both simulated steps and actual steps, determining

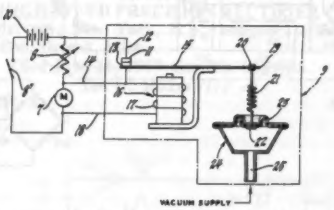


for each step before taking the step the position of the element with respect to the desired path, taking the next step on the axis which tends to cause the step to cross the desired path but only making the actual steps on each axis effect movement of the element on that axes with the actual steps alternating with simulated steps on the axis.

3,585,479
MOTOR SPEED CONTROL DEPENDENT ON SPEED FEEDBACK AND A VACUUM

Thomas A. Zickel, and Jackson R. Templin, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 30, 1969, Ser. No. 820,588
Int. Cl. H02p 5/10
U.S. Cl. 318—346 6 Claims



In a motor vehicle, a vacuum motor is employed to vary the electrical resistance that is connected in circuit with an air blower motor so that the volume of cold or warm air supplied to the passenger compartment of the vehicle is automatically modified to maintain the temperature of the air within the vehicle at a desired value.

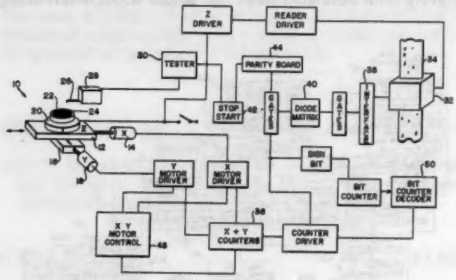
3,585,480
CONTROL SYSTEM FOR WAFER TEST APPARATUS

Johnny T. Kirkpatrick, Lowell, Mass., assignor to Transistor Automation Corporation, Lowell, Mass.

Filed Nov. 19, 1968, Ser. No. 776,984
Int. Cl. G05b 1/06
U.S. Cl. 318—603 7 Claims

A control system is provided for use in the operation of an XYZ table supporting an integrated circuit wafer for test purposes. The system is adapted to receive inputs from a computer or tape reader to provide automatic point-to-point probing of the wafer. The system may be converted from one

form of input to another by substituting interface and diode matrix decoding circuit boards. The system employs a down counter in place of a register as a memory unit and functions



by setting into the counter a particular number representing an instruction to index the table a certain distance along an axis. When the counter counts down to zero the system stops.

3,585,481

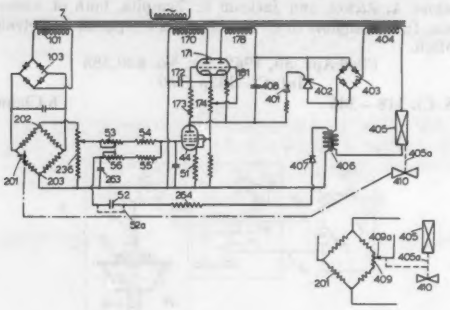
ELECTRONIC CONTROLLER WITH P.I.D. ACTION

Fritz Ludwig Felix Steghart, 11 Moreland Drive, Gerrards Cross, Buckinghamshire, England

Continuation-in-part of application Ser. No. 9,391, Feb. 17, 1960, now abandoned , which is a continuation-in-part of application Ser. No. 644,035, Mar. 5, 1957, now abandoned. This application Sept. 1, 1967, Ser. No. 680,273

Int. Cl. G05b *11/42*

U.S. Cl. 318—610 **9 Claims**



An electronic controller for a physical parameter having a sensor which is responsive to the magnitude of the physical parameter and which is connected in a measuring circuit. The output of the sensor is fed to an amplifier which controls a thermal actuator which, in turn, adjusts the magnitude of the parameter. The amplifier output is also fed to a switch which produces an output fed to the amplifier input through a delay circuit. The switch output is in the sense to cause the amplifier to switch from the state it is in so that the amplifier cycles continuously and the controller acts as a time modulation circuit. Feedback is applied from the output of the actuator to the measuring circuit.

3,585,482

BATTERY-CHARGING SYSTEM WITH VOLTAGE REFERENCE MEANS WITH TWO REFERENCE LEVELS

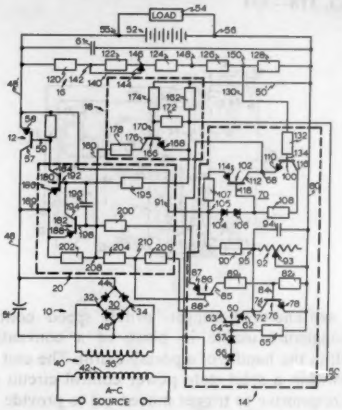
William B. Zelina, Edinboro, Pa., assignor to General Systems, Inc., Erie, Pa.

Filed Mar. 25, 1969, Ser. No. 810,139

Int. Cl. H02j *7/04*

U.S. Cl. 320—39 **17 Claims**

A battery-charging system wherein a power-controlling device, such as a power transistor, is controlled in accordance with feedback signals representing (1) a charging current exceeding a predetermined maximum reference level and (2) a battery voltage differing from the value associated with a voltage reference, the value of which is changeable between a first value related to a desired battery float voltage and a second value related to a battery voltage a preselected magnitude higher than the desired float voltage; the voltage reference means being arranged to automatically exhibit the



second value whenever the battery voltage falls below the desired float voltage and to remain at such second value until the battery has attained the preselected higher voltage when the voltage reference means will exhibit the first value and cause the battery voltage to be regulated at the desired float voltage. A temperature responsive means is included to cause the value of the voltage reference means to change with temperature in a manner corresponding with the typical change in battery voltage with temperature.

3,585,483

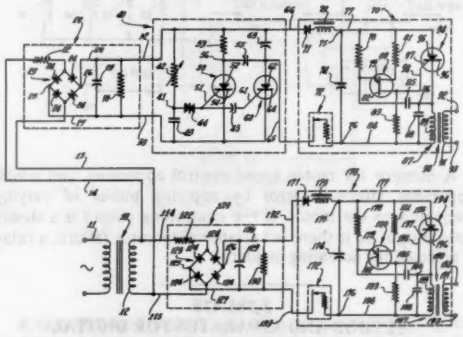
POWER SUPPLY

Clifford D. Skirvin, 2152 Waterby St., Westlake Village, Calif.

Filed Dec. 17, 1969, Ser. No. 885,908

Int. Cl. H02m *5/44;* **H05b** *37/00*

U.S. Cl. 321—4 **7 Claims**



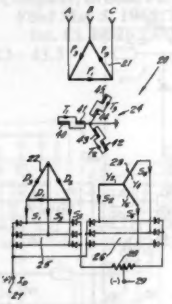
Circuitry for providing output power for a load such as neon lights, one of the lights being cyclically flashed and the other being constantly illuminated. The circuitry includes separate rectifiers for the two loads, to minimize and virtually eliminate any flicker in the constant portion of the circuit which might otherwise exist incident to the cyclic flashing or interrupting elsewhere in the circuit. The output is desirably

at about 20—23 kHz., which is approximately optimum frequency for neon and similar lighting applications, at an initial voltage of about 1600 volts and a running voltage of about 2900 volts for a typical 8-foot neon tube.

3,585,484
AXIAL AMPERE-TURN BALANCING IN MULTIPLE, SEGREGATED SECONDARY WINDING TRANSFORMERS

Isadore K. Dortort, Philadelphia, Pa., assignor to D-T-E Imperial Corporation, Philadelphia, Pa.

Filed Jan. 6, 1970, Ser. No. 873
Int. Cl. H02m *7/12*
U.S. Cl. 321—5 **13 Claims**

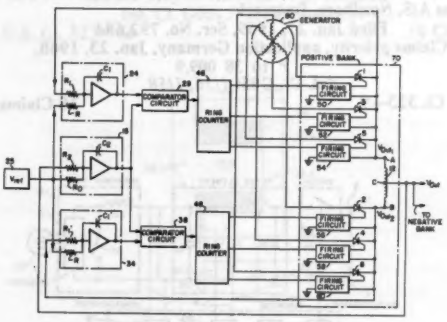


A tertiary winding is provided for a multisecondary transformer wherein the tertiary winding has axially separated parallel connected sections which are disposed adjacent respective axially displaced secondary windings and corresponding axially displaced series connected sections of the primary winding, to provide ampere turn neutralization for the primary and secondary windings at each instant.

3,585,485
NOVEL INTEGRAL FIRING ANGLE CONTROL FOR CONVERTERS

Laszlo Gyugyi, Penn Hills; John Rosa, Pittsburgh, and Brian R. Pelly, Murrysville, all of, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 20, 1969, Ser. No. 835,074
Int. Cl. H02m *5/14, 5/30*
U.S. Cl. 321—7 **14 Claims**

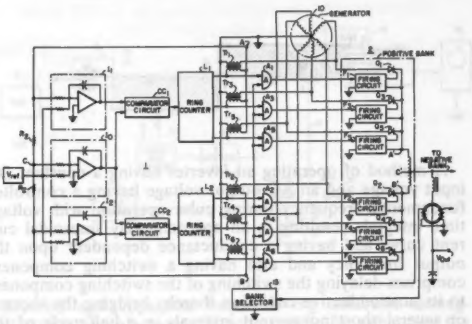


An improved method of firing angle control of thyristor type converters and particularly cycloconverters each of the component waveforms of the converter as well as the composite output waveform of the converter are summed with a reference waveform and the difference resulting from each of the summations is integrated. The firing angles of the thyristors are established when a predetermined relationship exists between the integral corresponding to the composite output waveform and the integrals corresponding to the component waveforms. A system of control is employed wherein the firing points are determined as a function of the integral of the converter output waveform.

3,585,486
AN ELECTRICAL CONVERTER SYSTEM EMPLOYING A CONTROL CONVERTER FOR CONTROLLING THE OPERATION OF A POWER CONVERTER

Laszlo Gyugyi, Penn Hills, and Brian R. Pelly, Murrysville, both of, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 20, 1969, Ser. No. 835,075
Int. Cl. H02m *5/14, 5/30*
U.S. Cl. 321—7 **9 Claims**

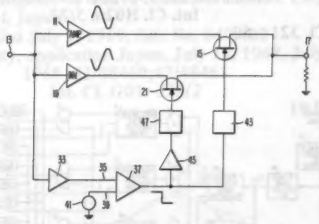


A converter system utilizing a control converter operated during both the positive and negative current half cycles of the output voltage to initiate firing pulses for a power converter which can be operated in either a noncirculating current mode or a circulating current mode.

3,585,487
HIGH-SPEED PRECISION RECTIFIER

John L. McNally, New York, N.Y., assignor to Burroughs Corporation, Detroit, Mich.

Filed June 26, 1969, Ser. No. 836,885
Int. Cl. H02m *7/12*
U.S. Cl. 321—8 **9 Claims**

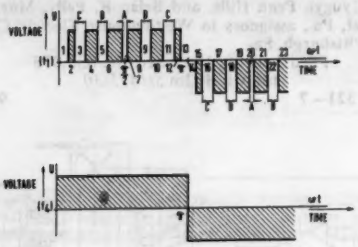


This invention relates to a high-speed, full-wave rectifier having two parallel forward paths, one for transmitting positive input signals and the other for inverting and transmitting negative input signals to a common output. Each path includes a gate for passing signals in response to a command. A comparator which generates a first voltage in response to a positive input and a second voltage in response to a negative input cooperates with the gates to enable the gate in the first forward path when the input is positive and to enable the gate in the second forward path when the input is negative. Thus, positive signals are passed through the first forward path to the output and negative signals are inverted and passed through the second forward path to the output thereby converting an arbitrary input waveform to full-wave, rectified output waveform.

3,585,488
METHOD OF OPERATING AN INVERTER

Hans-Joachim Gutt, Nurnberg, and Gerhard Ziegler, Ochenbruck, both of, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munchen, Germany

Filed Sept. 20, 1968, Ser. No. 761,177
Claims priority, application Germany, Sept. 22, 1967, P 16 38 608.6
Int. Cl. H02m 5/22
U.S. Cl. 321—44 14 Claims

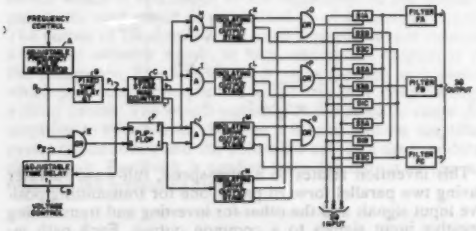


A method of operating an inverter having a constant DC input voltage and an AC output voltage having a controlled fundamental frequency during pulse operation with voltage time integrals resulting in an approximately sinusoidal current curve and having a conductance dependent upon the output frequency and also having a switching component comprises delaying the switching of the switching component to its nonconductive condition thereby bridging the shortest or several short noncurrent intervals in a half-cycle of the output voltage when the fundamental frequency or the frequency of the AC output voltage or both are simultaneously increased. The shortest voltage time integral is bridged under the same circumstances. The switching of the switching component to its nonconductive condition is delayed thereby reinserting the noncurrent intervals when the fundamental frequency or the frequency of the AC output voltage or both are simultaneously decreased.

3,585,489
A LOW-FREQUENCY AC REFERENCE GENERATOR WITH INHERENTLY BALANCED CONTROLLABLE OUTPUT VOLTAGE

Brian R. Pelly, Murrysville, and Laszlo Gyugyi, Pittsburgh, both of, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 20, 1969, Ser. No. 835,019
Int. Cl. H02m 5/22
U.S. Cl. 321—60 11 Claims

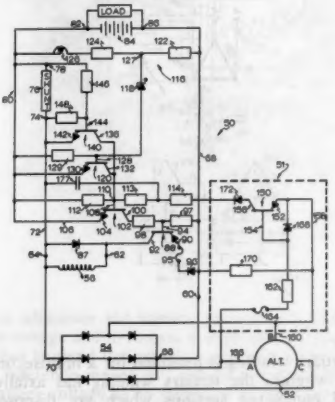


The invention comprises a low-power variable frequency AC generator with inherently controllable output voltage means and inherent phase reversal capabilities. The AC generator includes switching circuits which are controlled by the output pulses of an adjustable frequency pulse generator to establish the period within which each phase of a polyphase voltage source is in conduction. Additional control circuitry is provided to subdivide the period allotted for each phase conduction into a conduction and nonconduction subperiods to thereby control the amplitude of the output voltage waveform. The adjustable frequency pulse generator is controlled by a DC voltage and the frequency of the output pulses is proportional to this voltage.

3,585,490
VOLTAGE REGULATOR ARRANGEMENT FOR GENERATORS HAVING AUXILIARY EXCITATION MEANS

William B. Zelina, Edinboro, Pa., assignor to General Systems, Inc., Erie, Pa.

Filed Mar. 19, 1969, Ser. No. 808,478
Int. Cl. H02p 9/30, 9/08
U.S. Cl. 322—28 10 Claims

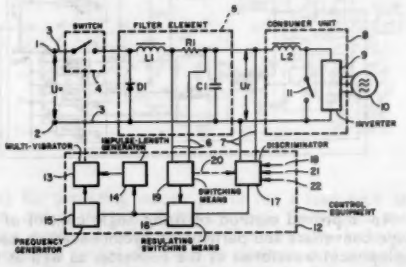


An arrangement for causing a desired full output voltage to be produced from a generator at a lower generator speed than is possible as a result of self buildup wherein means are provided to detect when the generator armature is rotating and for causing the generator to be separately excited from a source of direct current, such as a storage battery connected to be charged from the generator, whenever the generator armature attains a preselected speed, which speed is much lower than the normal operating speed.

3,585,491
D.C.-FED TWO STAGE REGULATED DIRECT-CURRENT SUPPLY SYSTEM

Tom Kastrup Petersen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Jan. 21, 1969, Ser. No. 792,684
Claims priority, application Germany, Jan. 23, 1968, P 16 38 009.9
Int. Cl. G05f 1/56, 1/58
U.S. Cl. 323—9 18 Claims



A DC supply system which is suitable as a DC voltage source for a DC to AC inverter. Two stage regulator means

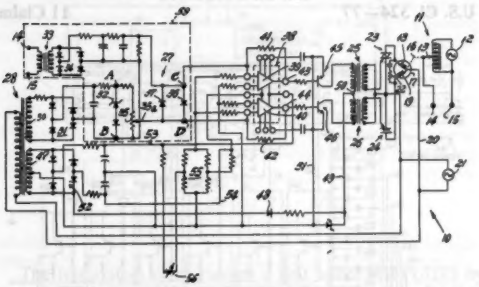
are provided for intermittently actuating a semiconductor switch. The first stage is at constant frequency with the switch being made conductive at the beginning of periods and nonconductive at varying points in the periods to providing conducting intervals of varying length between minimum and maximum lengths. The second stage is at variable frequency with the switch being made conductive for time intervals of constant length. The system is operable to maintain a predetermined voltage subject to the prevention of the load current exceeding a maximum predetermined value.

3,585,492

AUTOMATIC VOLTAGE REGULATION RESPONSIVE TO INPUT VOLTAGE VARIATIONS

Owen J. McCabe, Bristol, Conn., assignor to The Superior Electric Company, Bristol, Pa.

Filed May 5, 1969, Ser. No. 821,613
Int. Cl. H02p *13/06;* **H01f** *29/02*
U.S. Cl. 323—43.5 **4 Claims**



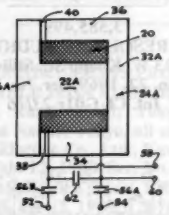
An adjustable voltage system for providing a substantially constant value of output voltage with variations in the input voltage in which the regulator has a mechanically movable regulating unit, such as an adjustable voltage autotransformer that is controlled by a reversible motor. The motor control circuitry is composed of solid state components which serve to sense the direction of the deviation of the value of output voltage from a preselected value and actuate the motor in a direction which overcomes the deviation.

3,585,493

VOLTAGE-REGULATING DEVICE

Herbert Moerlein, Chicago, Ill., assignor to Chicago Condenser, Chicago, Ill.

Filed May 9, 1969, Ser. No. 823,285
Int. Cl. G05f *3/06;* **H02p** *13/04*
U.S. Cl. 323—61 **10 Claims**



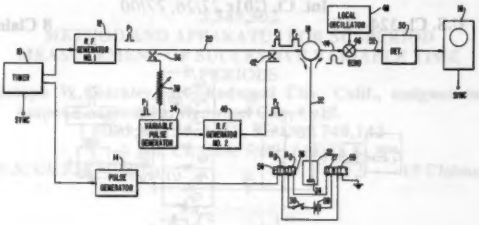
A voltage-regulating transformer having coil connected in series with a condenser to form a resonant circuit at the frequency of the source potential, and a ferromagnetic core having one or more magnetic gaps in the flux path of the coil. In different embodiments, the resonant input circuit utilizes separate condensers coupling the source to opposite ends of the coil, and a shunt capacitor across the coil. In separate embodiments, power is taken from the transformer by connection across the coil and by magnetic coupling through a second coil. The voltage-regulating device has the advantage of producing an output potential substantially more stable than the source potential, an output potential substantially sinusoidal in waveform and an output which collapses on overload to inherently protect the device against overloads.

3,585,494

ELECTRON SPIN ECHO SYSTEM HAVING A PULSED PREPARATION MAGNETIC FIELD APPLIED TO THE SAMPLE

Donald A. Bozanic; Dickron Mergerian, Baltimore, and Ronald W. Minarik, Lutherville, all of, Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 11, 1969, Ser. No. 832,100
Int. Cl. G01n *27/78*
U.S. Cl. 324—0.5 **10 Claims**



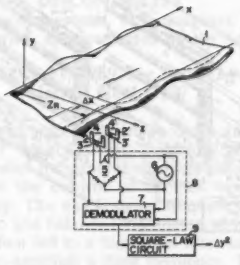
Method and apparatus for achieving adiabatic demagnetization of an electron spin echo sample for enhancing the dynamic range and operable repetition rate of electron spin echoes by applying a "preparation" pulsed magnetic field of a predetermined field strength and direction to the sample located in a resonant cavity prior to the application of a pair of successive microwave pulses orthogonally to a relatively smaller static, unidirectional magnetic field so that a spin echo signal is produced before thermal equilibrium of the sample is reached. The static magnetic field is established either after or concurrently with the pulsed magnetic field and in the same direction.

3,585,495

METHOD AND APPARATUS FOR DETECTING DURING OPERATION THE DEGREE OF ELONGATION OF ROLLED MAGNETIC METAL STRIPS

Moritada Kubo, Tokyo, and Kuniji Asano, Kawasaki-shi, both of, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kowasaki-shi, Japan

Filed July 9, 1969, Ser. No. 840,422
Claims priority, application Japan, July 12, 1968, July 12, 1968, 43/48460;43/48461
Int. Cl. G01r *33/12*
U.S. Cl. 324—34R **10 Claims**



A method and apparatus for detecting during operation the degree of elongation of rolled magnetic metal strips which consists in arranging at a prescribed interval at the outlet side

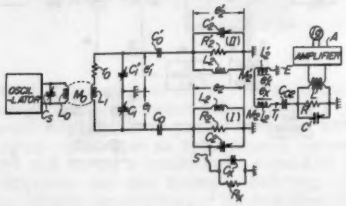
of a work roll assembly in the travelling direction of the metal strip at least two induction detectors for detecting electrical signals representing changes in inductance corresponding to the displacements of said strip in the direction of its thickness, determining the value of a difference between the signals from the two induction detectors by means of detectors corresponding to the amount of displacement of the metal strip in the direction of its thickness as determined with respect to said prescribed interval and squaring the differential value by means of square-law circuits to define the degree of elongation of the metal strip.

3,585,496

DIELECTRIC LOSS MEASURING APPARATUS EMPLOYING PLURAL TUNED CIRCUITS

Bunjiro Ichijo, Hamamatsu-shi, Japan, assignor to Tsugami Mfg. Co., Ltd., Tokyo, Japan

Filed Jan. 2, 1969, Ser. No. 788,422
Claims priority, application Japan, Jan. 5, 1968 43/482
Int. Cl. G01r *27/26, 27/00*
U.S. Cl. 324—60 **8 Claims**



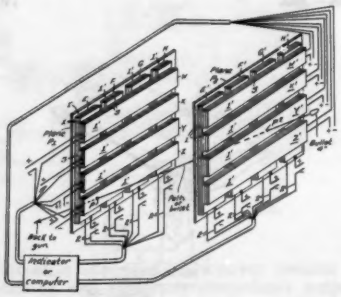
An apparatus for the precise measurement of very low dielectric losses of a dielectric specimen at high frequencies having a high frequency oscillator, a series tuning circuit electromagnetically coupled to the coil in a tank circuit of the high frequency oscillator and having two series-connected variable air capacitors, two tuning circuits electrostatically coupled to the series tuning circuit, and a detecting circuit having an indicating meter and inductively coupled to the parallel tuning circuits. A dielectric specimen is connected to one of the parallel tuning circuits and the zero method is utilized to measure the loss resistance of the specimen.

3,585,497

BULLET HOLE LOCATOR-OPEN CIRCUIT TYPE

Eugene W. Dalzell, Jr., Pittsfield, Mass.

Filed Apr. 7, 1969, Ser. No. 814,131
Int. Cl. G01r *27/02;* **A63b** *63/00*
U.S. Cl. 324—65R **1 Claim**



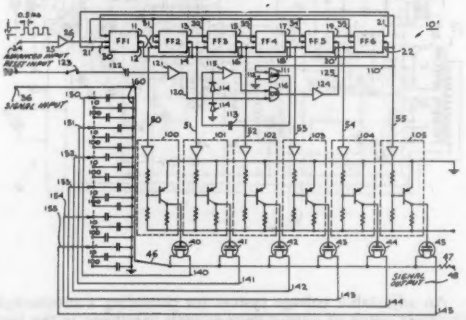
The direction from which a bullet or other object came is ascertained by comparing the points at which the object passed spaced-apart planes. Spaced electrically conducting wires or strips are crisscrossed to form a grid. A passing object smashes through the grid of pairs of electrical wires or strips in a first plane. It forces one wire or strip of a first pair into contact with a second wire or strip to close an electrical circuit. The object also closes a circuit through a second pair of wires or strips, in the first plane, running at right angles to the first pair, to close a second electrical circuit. An indicator or computer senses the point at which the object passed through these two pairs of wires or strips in the first plane. A similar grid is placed in a second plane, substantially parallel with said first plane. The second grid is also pierced by the passing object. The indicator or computer senses the point at which the object passed the second plane. It compares the two points and determines the direction from which the object came.

3,585,498

ACTIVE DIGITAL FILTER USING A MULTISTAGE RING COUNTER DRIVEN BY A CLOCK SOURCE

Robert E. Chandos, Santa Barbara, Calif., assignor to Electro-Optical Industries, Inc.

Filed Sept. 26, 1968, Ser. No. 773,692
Int. Cl. G01s *23/16*
U.S. Cl. 324—77 **11 Claims**



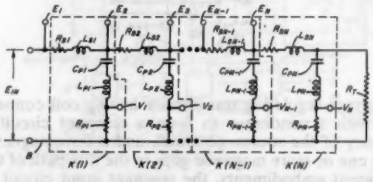
There is disclosed herein a digital filter system for providing continuous frequency filtering of input signals of unknown frequency to allow their analysis and detection. It employs a bank of simple resistance-capacitance filters and novel switching means for accomplishing the continuous filtering utilizing a multistage ring counter driven by a clock signal source. Outputs are provided at each stage which through driver amplifiers, operate solid state switches to switch appropriate RC filters. The switches disclosed are solid state, metal oxide, field effect transistors and the ring counter includes novel reset circuitry which insures that the system is immune from transient noise spikes which would tend to interfere with proper operation. There is also a switching mechanism for the filters in which the input and output of each filter bank is simultaneously switched using only one switch per stage.

3,585,499

FREQUENCY RESOLVING AUDIO DELAY LINE

Victor W. Bolie, 1023 W. Knapp St., Stillwater, Okla.

Filed Jan. 22, 1969, Ser. No. 792,928
Int. Cl. G01r *23/16*
U.S. Cl. 324—77 **7 Claims**



This invention relates to a frequency resolving audio delay line in the form of a ladder network consisting of a series of

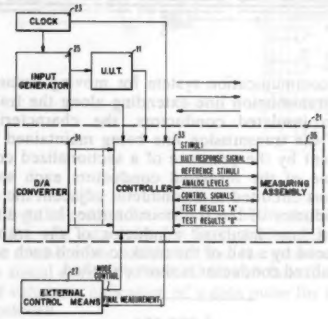
inverted L sections in which a universally applicable resistance value and a universally applicable Q value are used in each inverted L section.

3,585,500

DYNAMIC TIME/VOLTAGE TEST SYSTEM

Stanley J. Grubel, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 11, 1969, Ser. No. 848,802
Int. Cl. G01r *19/00, 15/12, 31/22*
U.S. Cl. 324—102 **15 Claims**



The test system characterizes a unit under test (UUT) by measuring on repetitive waveforms either the voltage level of the output waveshape at a specific time or the time required for the output waveshape to reach a specific voltage level. The system includes three main assemblies, a measuring assembly, D/A converter and controller. The measuring assembly employs a strobed tunnel diode as a voltage sampler for making all voltage and time measurements. The D/A converter functions as an interface device between the system and an external control means or computer. The controller extends the capabilities of the measuring assembly and includes: a countdown circuit to allow the system to handle high repetition rate signals; a delay circuit to assure proper time position of the measuring assembly with respect to the waveform being measured; a time calibrate subassembly which operates in conjunction with an A/D/A subassembly to allow for automatic calibration of the system; a peak detector subassembly which permits the system to make peak and valley measurements and allows preconditioning of the voltage sampler in the measuring assembly to make speedier measurements; and, a DC multiplex circuit card to allow for differential measurements and filtering the measurement to increase its precision. In addition, the system can be used as a sampling head for a real time oscilloscope.

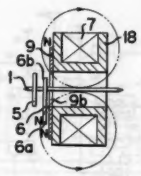
3,585,501

INDICATING INSTRUMENTS PROVIDED WITH A MOVABLE IRON STRIP MEMBER

Hidekazu Okada, Kunitachi-shi, Tokyo; Takahiko Aoki, Tokyo, and Ryozi Narita, Tokyo, all of, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Feb. 12, 1968, Ser. No. 704,940
Claims priority, application Japan, Feb. 16, 1967, Feb. 3, 1968, Feb. 3, 1968, Feb. 3, 1968, 12878/67;7196/68;7195/68;7194/68
Int. Cl. G01r *1/20*
U.S. Cl. 324—147 **6 Claims**

In a moving iron-type instrument including a movable vane and a fixed vane which are magnetized by the magnetic flux created by an exciting coil energized by an electric quantity to be measured to rotate the movable vane by a magnetic repulsive or attractive force acting between the rotary and fixed vanes, there are provided a flat plate-shaped movable vane located outside of the exciting flat plate-shaped fixed vane located between the movable vane and the exciting coil



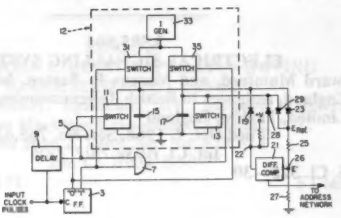
to be parallel with a plane described by the rotary movement of the movable vane.

3,585,502

METHOD AND APPARATUS FOR SUBPERIOD MEASUREMENT OF SUCCESSIVE VARIABLE TIME PERIODS

Joseph W. Barkley, Jr., Redwood City, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed July 31, 1968, Ser. No. 749,142
Int. Cl. G04f *9/00, 11/00*
U.S. Cl. 324—189 **15 Claims**



Self-clocking method and apparatus for continuously detecting desired subperiods of time periods between successive pulses where the time periods may vary. The successive pulses indicate the start and stop of each time period. A switching network responds to the start-stop indications to generate a responsive signal, e.g. a ramp function signal. The characteristics of the ramp are dependent upon the start and stop indications. A comparator network compares the magnitude of the responsive signal to a reference signal stored from the preceding period.

The invention herein described was made in the course of performance of a contract with the Department of the United States Army.

3,585,503

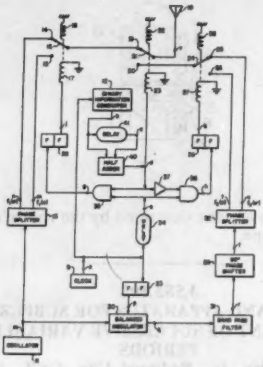
BINARY PSK TRANSMISSION USING TWO CLOSELY RELATED FREQUENCIES TO ELIMINATE PHASE DISCONTINUITY

Otto E. Rittenbach, Neptune, N.J. assignors to the United States of America, as represented by the Secretary of the Army

Filed Oct. 31, 1969, Ser. No. 872,969
Int. Cl. H04l *27/20*
U.S. Cl. 325—163 **6 Claims**

The binary transmission system includes an oscillator for generating an RF signal at a first frequency and a binary information generator for generating information at a second frequency under the control of a clock operating at the second frequency. The clock signal frequency is divided in half by a flip-flop and balanced modulated with the oscillator RF signal, and then fed to a band-pass filter tuned to one of the side bands to establish a third frequency. The difference between the first and third frequencies is one-half the clock rate. A pair of phase splitters provide phase-reversed outputs of the signals at the first and third frequencies. A logic circuit controlled by the binary information generator selectively

switches these phase-reversed signals to an antenna for transmission. Switching is accomplished such that the phase of the



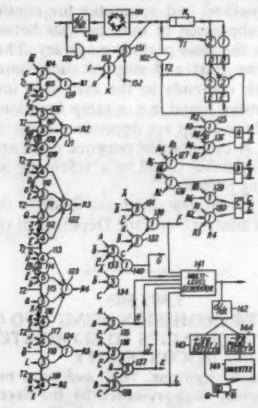
successively applied signals are phase matched at the time of switching.

3,585,504

ELECTRICAL SIGNALLING SYSTEM

Howard Mumford, and Marcus P. Barton, both of Taplow, England, assignors to British Telecommunications Research Limited, Taplow, England

Filed Oct. 7, 1968, Ser. No. 765,436
Int. Cl. H03k *7/02, 7/06*
U.S. Cl. 325—30 **7 Claims**



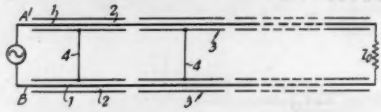
The invention is concerned with bandwidth and/or time compression of data signals, particularly facsimile signals having two levels only. The basis of the invention is to convert the binary facsimile signals into a multilevel signal. One method involves allocating of alternate levels of the multilevel signal to each of the two binary signal levels and arranging for transitions of the multilevel signal to be in the same direction when the corresponding binary transitions are close together. Another arrangement exploits the fact that the majority of white plus black run-length produced by scanning printed text are more than twice the length of the majority of black run-lengths. In this arrangement, alternate transitions are transmitted in different panels.

3,585,505

TRAIN-TO-WAYSIDE COMMUNICATION SYSTEM USING TRACKSIDE CONDUCTORS

Harry Heggie Ogilvy, Birmingham, England, assignor to British Railways Board, London, England

Filed Nov. 25, 1968, Ser. No. 778,406
Claims priority, application Great Britain, Jan. 15, 1968, 2062
Int. Cl. H04b *13/00*
U.S. Cl. 325—51 **2 Claims**



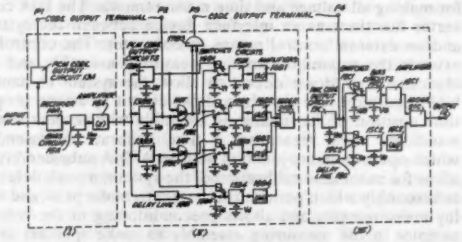
A track communication system for moving trains, has an open wire transmission line extending along the track comprising two insulated conductors, the characteristic impedance of the transmission line being maintained substantially constant by the presence of a sectionalized conductor adjacent one of the insulated conductors each section of which is short circuited to a conductor adjacent the other insulated conductor of the transmission line. In an alternative embodiment, one insulated conductor of the transmission line is replaced by a rail of the track to which each section of the sectionalized conductor is short circuited.

3,585,506

NONLINEAR ENCODER

Zen'iti Kiyasu, Musashino-shi, and Tetsuya Miki, Sendai-shi, both of, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 13, 1968, Ser. No. 783,497
Claims priority, application Japan, Dec. 15, 1967, 42-80496
Int. Cl. H03k *13/02*
U.S. Cl. 325—141 **8 Claims**



Each of a plurality of circuit stages has input and output characteristics expressed in terms of a horizontal coordinate axis representing input signals and a vertical coordinate axis representing output signals as a plurality of nonoverlapping continuous straight line segments extending between a minimum level and a maximum level of an output signal. Each of the stages produces code output signals corresponding to the levels of the input signals. The characteristic of one of the stages has a number of nonoverlapping continuous straight line segments greater than those of a succeeding one of the stages.

3,585,507

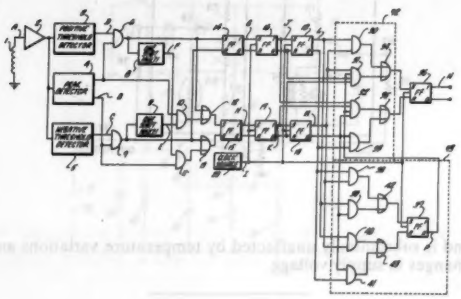
PULSE DISCRIMINATION CIRCUITRY

Charles E. Bickel, Thousand Oaks, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Aug. 30, 1968, Ser. No. 756,562
Int. Cl. H03k *5/20, 17/30*
U.S. Cl. 328—116 **12 Claims**

An indication of a data pulse is produced each time a pulse signal being discriminated exceeds a threshold value in a bit

cell, hereafter designated a threshold bit cell. Upon the detection of an amplitude peak in the first bit cell following a threshold bit cell, which may be substantially less than the threshold value, the pulse signal is examined during the second bit cell following the threshold bit cell. When the examination establishes that the peak amplitude of the pulse



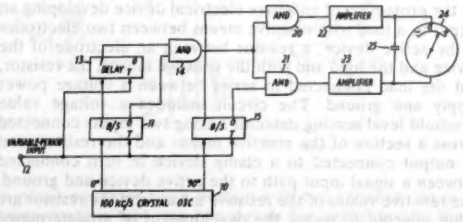
signal during the second bit cell exceeds the threshold value, an indication of a data pulse for the first bit cell is produced. When the examination establishes that the peak amplitude of the pulse signal during the second bit cell fails to exceed the threshold value, no indication of a data pulse for the first bit cell is produced.

3,585,508

CIRCUIT FOR DETERMINING THE DIFFERENCE BETWEEN A FIXED AND UNKNOWN FREQUENCY

Derek N. Crowther, Edgware, England, assignor to G. & E. Bradley Limited, London, England

Filed Nov. 22, 1968, Ser. No. 778,251
Claims priority, application Great Britain, Nov. 24, 1967, 53664/67
Int. Cl. H03k *9/06*
U.S. Cl. 328—134 **10 Claims**



Determination of the fractional difference between the periods of an input signal and a standard signal is effected by forming a difference signal the frequency of which is equal to the difference between the frequencies of the input and standard signals, and generating an output signal consisting of one or more cycles of the input signal for each cycle of the difference signal, whereby the mean value of the output signal is proportional to the percentage period difference.

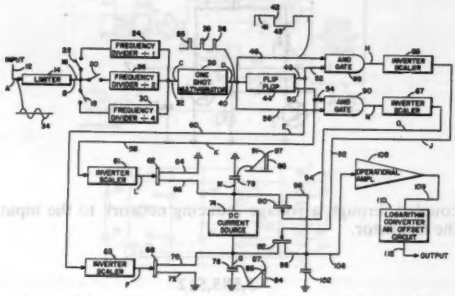
3,585,509

LOGARITHM FREQUENCY CONVERTER

Robert D. Davis, Spring Valley, and Norman F. Stellman, San Diego, both of, Calif., assignors to Spectral Dynamics Corporation, San Diego, Calif.

Filed Sept. 27, 1968, Ser. No. 763,332
Int. Cl. H04b *1/04*
U.S. Cl. 328—145 **14 Claims**

A logarithm frequency converter produces a logarithm DC output proportional to the frequency of an input signal by providing control pulses for each cycle, which control pulses time the charge of a storage unit and a transfer of a portion of the stored charge into a hold storage unit, which charge in



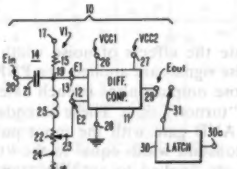
the hold storage unit is processed by a logarithm converter to a DC logarithm output signal that is proportional to the frequency of the input signal.

3,585,510

THRESHOLD CIRCUIT APPARATUS HAVING STABILIZED INPUT LEVEL

Francis L. O'Malley, Apalachin, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 2, 1969, Ser. No. 829,618
Int. Cl. H03k *5/08*
U.S. Cl. 328—171 **5 Claims**



The differential amplifier of a threshold circuit apparatus is provided with stabilized means for maintaining the threshold level at a substantially constant value whenever the duty cycle characteristic varies.

3,585,511

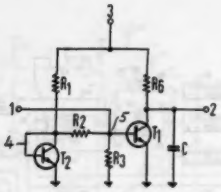
INTEGRATED CIRCUIT ARRANGEMENT FOR DEMODULATING AN AMPLITUDE MODULATED HIGH FREQUENCY SIGNAL

Eckart Schatter, and Walter O. Spichall, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed June 18, 1969, Ser. No. 834,317
Claims priority, application Germany, July 16, 1968, P 17 66 763.9
Int. Cl. H03d *1/18*
U.S. Cl. 329—101 **6 Claims**

An adjusting circuit which adjusts the output current of a transistor for demodulating an amplitude modulated high frequency signal in an integrated circuit in the absence of

high frequency signal comprises an asymmetrical conductor closely thermally coupled to the transistor and electrically



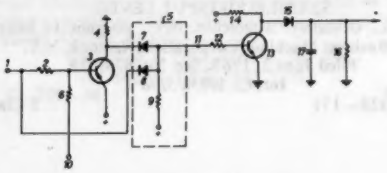
coupled through a voltage reducing network to the input of the transistor.

3,585,512

FREQUENCY DISCRIMINATOR TO ELIMINATE THE EFFECT OF NOISE PULSE WIDTH MODULATIONS

Gerhard Gunter Gassmann, Berkheim, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed May 13, 1969, Ser. No. 824,045
Claims priority, application Germany, May 18, 1968, P 17 66 415.2
Int. Cl. H03d *3/00*
U.S. Cl. 329—103 **3 Claims**



To eliminate the effects of noise width modulations, the input FM pulse signals are applied to a PNP transistor the duration of whose output pulses is each extended for a period equal to the "turnoff" time. These extended pulses are combined in an AND gate with the input pulse signals leaving pulses of a constant width equal to the "turnoff" time. The latter pulses are applied to an NPN transistor whose "turnoff" time (storage time + fall time) after each pulse is such that the leading edge of the next pulse coincides with some point on the current fall time (voltage rise time) in the NPN-transistor which point varies with the pulse frequency. Frequency centering of the discriminator is accomplished by feeding back the integrated output voltage to the base of the second-mentioned transistor to control its "turnoff" time.

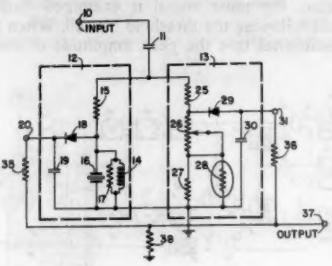
3,585,513

FREQUENCY MODULATION DISCRIMINATOR HAVING FIRST BRANCH WITH RESONATOR AND SECOND BRANCH PROVIDING VOLTAGE AND TEMPERATURE COMPENSATION

Alfred R. Lucas, Northbrook, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed May 2, 1969, Ser. No. 821,291
Int. Cl. H03d *3/26, 3/28*
U.S. Cl. 329—117 **9 Claims**

A discriminator for a frequency modulated receiver, having slope detector and reference portions, with each portion developing a signal from the input signal. The slope detector portion signal varies in accordance with the frequency and amplitude of the input signal, and varies with temperature. The reference portion signal varies in accordance with the amplitude of the input signal and also varies in accordance with temperature. Signals from the two portions are combined at the output to produce a resultant signal which varies in amplitude according to the frequency of the input signal



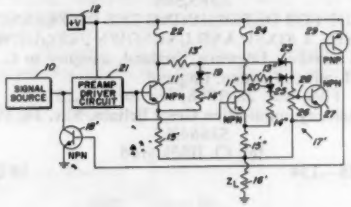
and is substantially unaffected by temperature variations and changes in supply voltage.

3,585,514

POWER RESPONSIVE OVERLOAD SENSING CIRCUIT

Arthur P. Kubicz, Richardson, Tex., assignor to Collins Radio Company, Cedar Rapids, Iowa

Filed Aug. 1, 1968, Ser. No. 749,548
Int. Cl. H03f *21/00, 3/04*
U.S. Cl. 330—11 **9 Claims**



A power responsive overload sensing and protective circuit for the protection of an active electrical device developing an output to a load with resistive means between two electrodes of the active device, a resistor between an electrode of the device and the load and with the resistive means, the resistor, and the load connected in series between a voltage power supply and ground. The circuit includes a voltage value threshold level sensing detector having two inputs connected across a section of the resistive means and the resistor, and an output connected to a clamp device in turn connected between a signal input path to the active device and ground. The resistive values of the resistive means and the resistor are value selected to insure the development of predetermined voltage ratios between the voltage supplied and the voltage across the load. In one embodiment resistor values of the resistive means are so chosen that the voltage developed across one of them is quantitatively substantially equal to the voltage developed across the resistor connected to the load when the voltage developed across the load is approximately equal to one-half the voltage supplied.

3,585,515

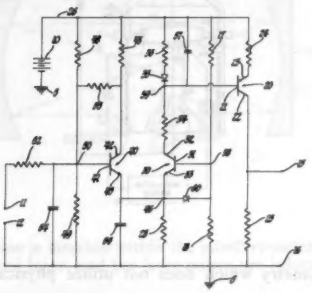
CIRCUIT FOR PRODUCING AN OUTPUT SIGNAL WHICH VARIES INVERSELY WITH THE MAGNITUDE OF AN INPUT SIGNAL

Joseph A. Riess, Dayton, and Conrad P. Vespie, Brookville, both of, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 29, 1968, Ser. No. 780,092
Int. Cl. H03f *3/68*
U.S. Cl. 330—20 **2 Claims**

A circuit for producing an output signal which varies inversely with the magnitude of an input signal. The base drive cir-

cuit of an output transistor, which produces an output signal across associated output circuit terminals of a magnitude proportional to the degree of conduction through the current carrying electrodes thereof, is established across a direct current potential source through the current carrying electrodes of a first control transistor, base biased for class A operation,



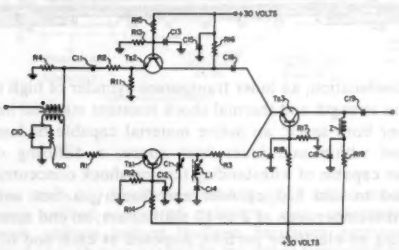
and a series connected control transistor emitter resistor. The input signal is applied across the base-emitter electrodes of a second control transistor, also base biased for class A operation, the collector-emitter electrodes of which are connected across the direct current potential source through the emitter resistor of the first control transistor.

3,585,516

ALL PASS NETWORK FOR PHASE EQUALIZERS OF WIDE BAND COMMUNICATION SYSTEMS

Angelo F. Ricagni, Milan, Italy, assignor to Automatic Electric Laboratories, Inc., Northlake, Ill.

Filed Sept. 9, 1969, Ser. No. 856,404
Int. Cl. H03f *3/68*
U.S. Cl. 330—30 **6 Claims**



A phase equalizer has a portion with two channels; an incoming signal is split into two signals for application to the channels so that the phase of the signals differ by 180° and the ratio of their amplitudes is 2:1. The channel with the signal of greater amplitude includes an adjustable resonant circuit for changing phase of its signal, and the signals of both channels are recombined in a succeeding adder circuit. By simply adjusting the resonant circuit, the phase characteristic of the equalizer can be changed readily without changing the amplitude characteristics.

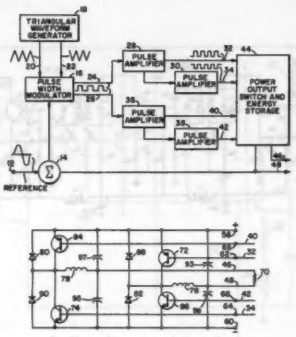
3,585,517

HIGH-EFFICIENCY POWER AMPLIFIER

Roger B. Herbert, Williamsville, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 1, 1968, Ser. No. 725,852
Int. Cl. H03f *3/3*
U.S. Cl. 330—10 **4 Claims**

Described is a high-efficiency Class B power amplifier which operates at essentially 100 percent efficiency for all output voltages, either direct current or alternating current. This is accomplished by utilizing in the amplifier switching transistors in combination with chokes, the arrangement being such that unwanted voltages appear across the chokes



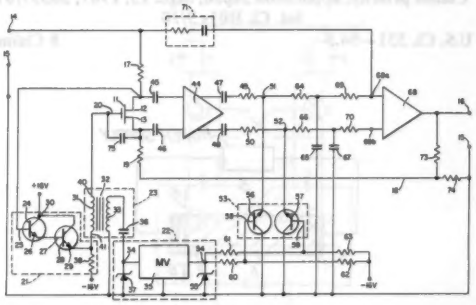
at any instant. The chokes, being energy storing devices, can deliver their stored energy to the load after the transistors are turned off.

3,585,518

MODULATOR EMPLOYING A SOLID-STATE ELECTRIC FIELD DEVICE

James J. Hitt, Willow Grove, and Gerald Mosley, Melrose Park, both of, Pa., assignors to Leeds & Northrup Company, Philadelphia, Pa.

Filed Nov. 12, 1968, Ser. No. 774,608
Int. Cl. H03f *3/38, 3/16*
U.S. Cl. 330—10 **13 Claims**



An improved FET modulator circuit is adapted to modulate the small potential difference between two varying signals. The two channel electrodes of the FET are each connected to an input of a differential amplifier. The high-impedance input of a noninverting unity gain amplifier is connected to one of the channel electrodes while its low-impedance output is connected to the control electrode, whereby the control electrode follows the potential of the channel electrode. A high frequency switching potential is superimposed on the output of the unity gain amplifier.

3,585,519

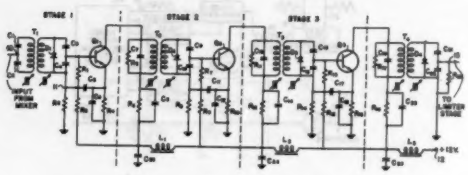
NARROW BAND INTERMEDIATE FREQUENCY AMPLIFIER

Kenneth Burgess, Indianapolis, Ind., assignor to the United States of America, as represented by the Secretary of the Navy

Filed Oct. 16, 1969, Ser. No. 866,809
Int. Cl. H03f *3/10*
U.S. Cl. 330—21 **4 Claims**

A narrow band intermediate frequency (IF) amplifier having three stages coupled by double-tuned filters, each stage

including a semiconductor amplifying element that is biased and loaded to give a slightly negative output resistance with a voltage protective diode in each stage, the protective diode



in the last stage being a hot-carrier diode to provide low intermodulation distortion at high input signal levels between stages thereby producing output IF of narrow 3 decibels (db.) bandwidth for frequency modulation (FM) circuits.

3,585,520

DEVICE FOR GENERATING PULSED LIGHT BY STIMULATED EMISSION IN A SEMICONDUCTOR TRIGGERED BY THE FORMATION AND TRANSIT OF A HIGH FIELD DOMAIN

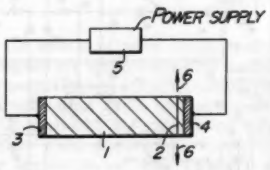
Hisayoshi Yanai, Tokyo; Masatoshi Migitaka, Kodaira-shi; Hiroshi Kodera, Hino-shi; Toshiaki Ikoma, Kokubunji-shi, and Takayuki Sugeta, Tokyo, all of, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 11, 1968, Ser. No. 759,131

Claims priority, application Japan, Sept. 13, 1967, 58397/67

Int. Cl. H01s *3/10*

U.S. Cl. 331—94.5 **8 Claims**



A device for generating pulsed light comprising a semiconductor element including a PN junction therein capable of inducing Gunn oscillation and radiating laser light, a negative electrode attached to a portion of the N-type region of the semiconductor element, and a positive electrode attached to a portion of the P-type region of the semiconductor element.

3,585,521

STIMULATED EMISSION OF RADIATION DEVICE

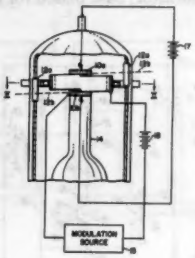
Charles W. Baugh, Severna Park, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 22, 1969, Ser. No. 883,685

Int. Cl. H01s *3/00*

U.S. Cl. 331—94.5 **2 Claims**

Stimulated emission of radiation amplifier utilizing a negative temperature media having phonon transitions coupled to either end of the electronic transitions. These materials are substantially transparent to optical energy and the media here is pumped directly by high voltage electrons. The media illustrated is in the form of a thin film closed ring providing a



cavity geometry which does not utilize physical reflecting mirrors.

3,585,522

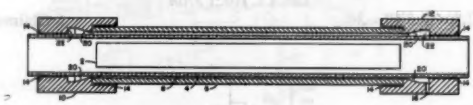
CYLINDRICAL LIGHT EMITTER

Charles H. Church, and Edward G. F. Arnott, both of Wilkinsburg, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 272,678, Apr. 12, 1963, now abandoned. This application Oct. 3, 1966, Ser. No. 600,288

Int. Cl. H01s *3/09*

U.S. Cl. 331—94.5 **5 Claims**



In combination; an inner transparent cylinder of high compression strength and thermal shock resistant material having an inner bore space; an active material capable of lasering disposed within said inner bore space; a diffusing outer cylinder capable of withstanding tension shock concentrically disposed to said first cylinder and forming a first annular space thereinbetween of 2 to 12 millimeters; an end member, including an electrode portion, disposed at each end of said cylinders and enclosing said first annular space at each end thereof; each said end member having an inner annular recession; the walls of said recession defining a second annular space with the exterior of said inner cylinder to provide an expansion chamber at each end of said first annular space; means for providing gas to said annular spaces; and means for energizing said electrode portions to ionize the gas within said annular spaces.

3,585,523

SPHERICAL MIRROR CAVITY FOR MODE-LOCKED LASER

William H. Glenn, Vernon, Conn., and David A. Stetser, Jr., Bethany, Ohio, assignors to United Aircraft Corporation, East Hartford, Conn.

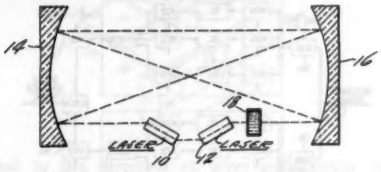
Filed June 19, 1968, Ser. No. 738,217

Int. Cl. H01s *3/00*

U.S. Cl. 331—94.5 **1 Claim**

A spherical mirror interferometer cavity for a mode-locked laser for increasing feedback path length and therefore the time between consecutive mode-locked pulses. In one embodiment a laser rod and a mode-locking dye cell are in-

serted within an interferometer cavity comprising two spherical mirrors. In another embodiment a spherical mirror optical delay line is inserted within the interferometer cavity of a mode-locked laser, and the laser pulses are injected into the delay line.



3,585,524

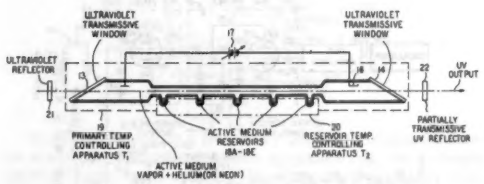
ION LASERS EMPLOYING GAS MIXTURES

William T. Silfvast, Holmdel Township, Monmouth County, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.

Continuation-in-part of application Ser. No. 759,922, Sept. 16, 1968, now abandoned. This application Apr. 28, 1969, Ser. No. 819,859

Int. Cl. H01s *3/09, 3/22*

U.S. Cl. 331—94.5 **10 Claims**



Ion lasers are disclosed which employ active media comprising ionized vapors of cadmium, zinc, magnesium, aluminum, gallium, indium, thallium, beryllium, germanium, tin or lead in each case excited to the upper laser state by a nonresonant interaction with helium or neon metastable atoms. The excess energy of the metastable atom in the nonresonant interaction is carried off by a free electron; and lasing action occurs in the singly ionized metallic vapor. Continuous-wave lasing action based on this principle has been observed at 325 mm. in the ultraviolet in singly ionized cadmium, at 645.3 nm. and 684.4 nm. in the visible in singly ionized tin, and at 747.9 nm. in the infrared in singly ionized zinc.

3,585,525

VARIABLE FREQUENCY SIGNAL GENERATOR

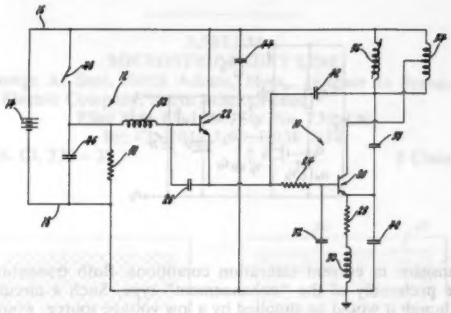
Eldred H. Wiechmann; Charles A. Harmon, and James J. Gotshall, all of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 7, 1969, Ser. No. 800,344

Int. Cl. H03b *5/12*

U.S. Cl. 331—117 **4 Claims**

An oscillator produces an output signal at the frequency of the oscillator when operative. The oscillator includes a biasing circuit for determining the operability of the oscillator and a tuning circuit for determining the frequency of the oscillator. A transistor is connected in the biasing circuit and in the tuning circuit for defining the operability and the frequency of the oscillator as functions of the voltage applied to the transistor. A control circuit regulates the voltage applied to the transistor so as to control the production and the frequency of the output signal.



3,585,526

ASTABLE MULTIVIBRATOR HAVING A SWEEP FREQUENCY STABILIZED BY A CRYSTAL OSCILLATOR

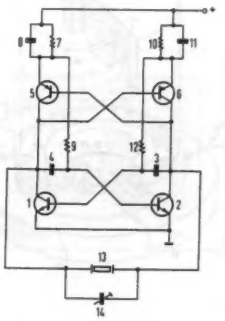
Robert Zelinka, Lippstadt, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed June 10, 1969, Ser. No. 831,936

Claims priority, application Germany, June 20, 1968, P 17 62 456.5

Int. Cl. H03k *3/282*

U.S. Cl. 331—113 **4 Claims**



A bistable complementary multivibrator is connected to an astable control multivibrator whose sweep frequency is stabilized by a crystal oscillator. The transistors of the complementary multivibrator are connected to the collector electrodes of the transistors of the control multivibrator and are connected in mutual feedback relation with elimination of interpolation of components.

3,585,527

OSCILLATOR CIRCUIT INCLUDING A QUARTZ CRYSTAL OPERATING IN PARALLEL RESONANCE

Jakob Luscher, Carouge Geneva, Switzerland, assignor to Societe Suisse Pour L'Industrie Horlogere S. A., Geneva, Switzerland

Filed Oct. 27, 1969, Ser. No. 869,474

Int. Cl. H03b *5/36*

U.S. Cl. 331—116R **4 Claims**

An oscillator circuit which comprises a quartz crystal operating in parallel resonance, a MOS transistor, forming the active component of the circuit, and means for setting the amplitude of the periodic signal delivered by the circuit. These means include another MOS transistor, in series with

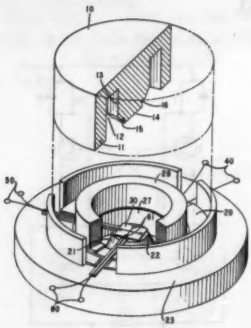
the first, and a voltage source, e.g. an amplifier, for controlling the second transistor, said source delivering a continuous signal having a value sufficient to place the second transistor in current saturation conditions. Both transistors are preferably of the "enhancement" type. Such a circuit, although it would be supplied by a low voltage source, would only consume a very small amount of power.

3,585,528

HALL-EFFECT MODULATOR INCLUDING DISTORTION SUPPRESSION MEANS

Robert L. Wallace, Jr., Warren Township, Somerset County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 28, 1968, Ser. No. 771,158
Int. Cl. H03c *3/12, 1/48*
U.S. Cl. 332—29 M **6 Claims**



In practical Hall-effect modulators, unwanted signal components, for example, carrier frequency harmonics and magnetic field components, appear in the output signal. These unwanted signal components are suppressed by selectively shaping a face of a magnetic core member of the modulator to introduce an inhomogeneity into the magnetic field applied to the Hall element. Further suppression of unwanted signal components is achieved by utilizing a potentiometer connected between output terminals of the Hall element and an additional terminal substantially in the center of the element.

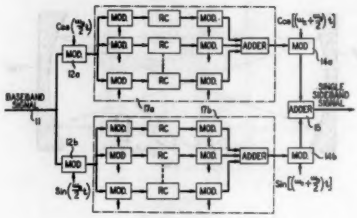
3,585,529

SINGLE-SIDEBAND MODULATOR

Sidney Darlington, Passaic Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Nov. 18, 1968, Ser. No. 776,395
Int. Cl. H03c *1/52*
U.S. Cl. 332—45 **7 Claims**

A single-sideband modulator is realized by supplying an input signal to be modulated to a plurality of circuit paths. At least one of said circuit paths comprises the serial connection of a first modulator, a noninductive filter network, and a second modulator. The output signals of each circuit path are arithmetically combined to develop a single-sideband modulated counterpart of the input signal.

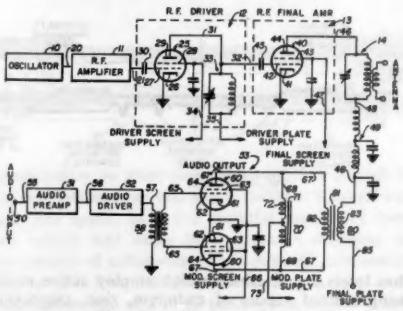


3,585,530

INDUCTION COUPLED AMPLITUDE MODULATION SYSTEM

Wallace W. Wahlgren, Oakland, Calif., assignor to The Rucker Company, Oakland, Calif.

Filed Feb. 27, 1969, Ser. No. 802,983
Int. Cl. H03c *1/10*
U.S. Cl. 332—43 **8 Claims**



A system for coupling the output of a modulating amplifier to a radio frequency amplifier, requiring no blocking capacitor and utilizing separate modulation transformer and modulation reactor units to isolate the modulation transformer from heavy direct currents. In one embodiment, the system includes an auxiliary modulation transformer for simultaneous modulation of multiple electrodes in two or more RF amplifier stages.

3,585,531

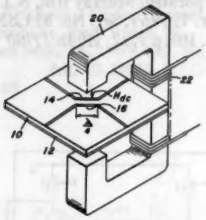
MAGNETICALLY VARIABLE MICROSTRIP DIRECTIONAL COUPLER DEPOSITED ON FERRITE SUBSTRATE

James E. Degenford, Severna Park, and Gus Kern, Glen Burnie, both of, Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 29, 1969, Ser. No. 820,109
Int. Cl. H01p *1/32, 5/14*
U.S. Cl. 333—1.1 **1 Claim**

Described is a novel variable coupling, directional coupler employing parallel microstrip transmission lines deposited on

a substrate of ferrite material. Variable coupling is achieved by varying a magnetic field applied to the ferrite material

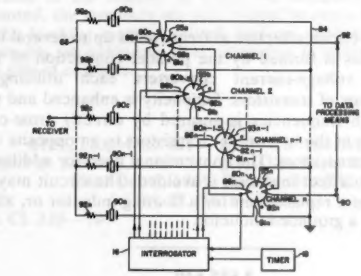


normal to the direction of wave propagation along the microstrip transmission lines.

3,585,532
CONTIGUOUS FILTER BANK USING SHARED RESONATORS

Norman A. Ruggles, Pasadena, and Irving I. Kaplan, Baltimore, both of, Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 4, 1968, Ser. No. 765,059
Int. Cl. H01p *5/12*
U.S. Cl. 333—7 **10 Claims**

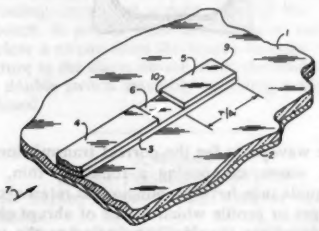


An improvement in a frequency detection channel utilized in spectrum analyzers for such apparatus, as, for example, pulse doppler radar systems. The frequency detection channel is comprised of a passive circuit including a shared resonator band-pass filter, which is adapted to provide coherent integration, coupled to a square loop core which is adapted to provide envelope detection and postdetection integration.

3,585,533
MICROWAVE MICROCIRCUIT ELEMENT WITH RESISTIVE HIGH FREQUENCY ENERGY ABSORBER

Roger M. Denhard, Clearwater, Fla., assignor to Sperry Rand Corporation

Filed Feb. 26, 1970, Ser. No. 14,415
Int. Cl. H01p *3/08, 1/22, 1/26*
U.S. Cl. 333—22 **11 Claims**

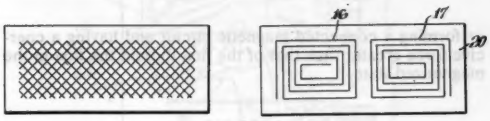


A high frequency or microwave microcircuit device is disclosed having application as an integrated circuit element for precise attenuation of high frequency or microwave energy or for the accurate termination of a transmission line carrying such energy. The novel microcircuit element is particularly adapted for use in planar integrated microstrip transmission line systems.

3,585,534
MICROSTRIP DELAY LINE

George A. Senf, North Adams, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed May 17, 1968, Ser. No. 730,026
Int. Cl. H01p *3/08;* **H03h** *7/34*
U.S. Cl. 333—29 **5 Claims**

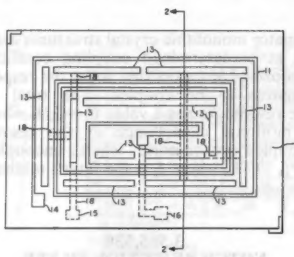


The characteristic impedance of a microstrip delay line is controlled by altering the effective area of the ground plane. Reducing the effective ground plane area increases the characteristic impedance and improves the output rise time while maintaining a nearly constant time delay.

3,585,535
MICROSTRIP DELAY LINE

George A. Senf, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed July 22, 1969, Ser. No. 843,476
Int. Cl. H01p *3/08;* **H03h** *7/34*
U.S. Cl. 333—29 **6 Claims**



A microstrip delay line where both active conductive lines forming a series inductance and conductive ground strips in capacitive relation to the active lines are deposited on the same side of a ceramic substrate. The characteristic impedance of the microstrip delay line is controlled by altering the distance between the active conductive line and the conductive ground strips which changes the fringing of electrostatic flux.

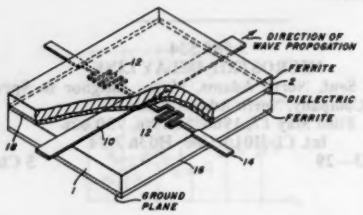
3,585,536
RECIPROCAL, MICROSTRIP, LATCHED, FERRITE PHASE SHIFTER

Aleksander I. Braginski, Pittsburgh, and Daniel C. Buck, Hanover, both of, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 16, 1970, Ser. No. 11,453
Int. Cl. H01p *1/18*
U.S. Cl. 333—31 **6 Claims**

Described is a latching ferrite phase shifter for microstrip transmission lines compatible with integrated circuits and incorporating two ferrite materials deposited by vapor deposition techniques, one of the ferrite materials being in the path of the electromagnetic wave passing along the microstrip cir-

cuit and designed to control the amount of phase shift produced by the phase shifter, and the other of the ferrite materials exercising a magnetostatic interaction with the first



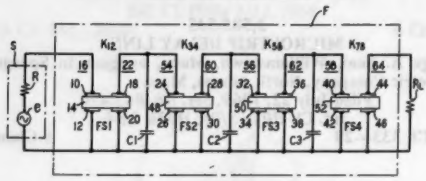
or forming a connected magnetic circuit and having a coercive force greater than that of the first to hold the first in the magnetized state.

3,585,537

ELECTRIC WAVE FILTERS

Robert C. Rennick, Center Valley, and Warren L. Smith, Allentown, both of, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Feb. 10, 1969, Ser. No. 797,837
Int. Cl. H03h *9/32*
U.S. Cl. 333—72 **5 Claims**



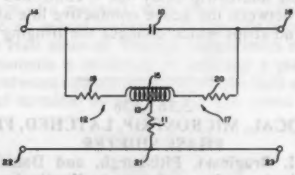
Multiresonator monolithic crystal structures are coupled to each other at predetermined coupling coefficients K by means of coupling capacitors that shunt the respective structure's resonators to be coupled. The total capacitance coupling the resonators has a value $C_c=C_1/K$ where C_1 is the equivalent motional capacitance of the resonators. The capacitor-coupled resonators, when uncoupled, exhibit frequencies f_0 $1-K$, where f_0 is the filter's midband frequency.

3,585,538

NOTCH REJECTION FILTER

Joe P. Lindsey, Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Apr. 1, 1969, Ser. No. 812,174
Int. Cl. H03h *9/00*
U.S. Cl. 333—74 **2 Claims**



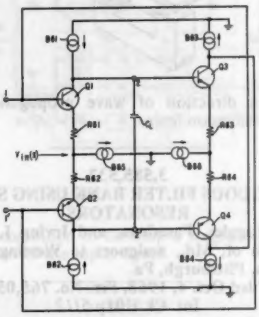
A filter which completely suppresses one frequency has one center tapped inductance connected in parallel with a condenser, and a resistor having one terminal connected to the center tap of said inductance. The input signal to be filtered is applied between the condenser and the other terminal of the resistor while the output impedance is connected between the other terminal of the condenser and the other terminal of the resistor.

3,585,539

HIGH FREQUENCY GYRATOR CIRCUITS

Tadikonda N. Rao, Plainfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 1, 1969, Ser. No. 811,836
Int. Cl. H01p *1/32*; H03h *11/00*
U.S. Cl. 333—80T **16 Claims**



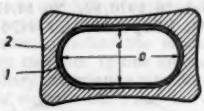
A gyrator circuit effective at frequencies up to several tens of megacycles is formed by the parallel connection of two differential voltage-current converters each utilizing a respective pair of transistors. Simplicity is enhanced and stability at high frequencies is ensured by directly cross-connecting each of the two output transistors to an opposite one of the input transistors. The conventional need for additional transistors to effect inversion is avoided. The circuit may be connected as a replacement for a floating inductor or, alternatively, for a grounded inductor.

3,585,540

FLEXIBLE WAVEGUIDE HAVING MEANS TO REDUCE DEFORMATION OF INTERNAL CROSS SECTION

Erich Schuttloffel; Heinz Zanzinger, and Gerhard Schickle, all of Backnang Wurttenberg, Germany, assignors to Telefunken Patentverwertungsgesellschaft m.b.H, Ulm Donau, Germany

Filed July 17, 1968, Ser. No. 745,578
Claims priority, application Germany, July 20, 1967, T P 16 90 288.8
Int. Cl. H01p *3/14*
U.S. Cl. 333—95 **12 Claims**



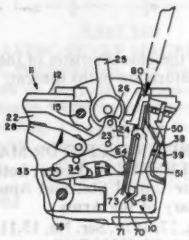
A flexible waveguide for the correct transmission of electromagnetic waves, comprising a relatively thin, seamless metal waveguide tube having a noncircular internal cross section, the edges or profile which is free of abrupt changes of direction. Means are provided, according to the invention, for imparting a rigidity to the waveguide tube which will reduce to a minimum any deformation of the internal cross section, when the waveguide is bent or twisted.

3,585,541

ELECTRIC CIRCUIT BREAKER WITH PUSHBUTTON FOR TRIPPING

Kenneth W. Erickson, Cedar Rapids, Iowa, assignor to Square D Company, Park Ridge, Ill.

Filed Sept. 16, 1969, Ser. No. 858,348
Int. Cl. H01h 71/12
U.S. Cl. 335—45 2 Claims



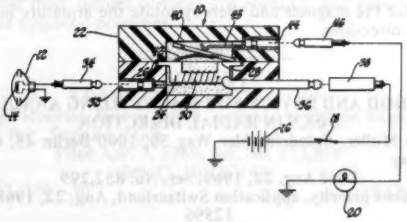
An electric circuit breaker with a recessed pushbutton operable to move an armature member and an ambient temperature compensating bimetallic latching member endwise. Because of the manner in which the armature member is mounted, the members are also rotated to move the free end of the latching member out of latching relationship with a releasably latchable trip lever releasable to effect separation of a pair of contacts.

3,585,542

ELECTROMAGNETIC SWITCH ASSEMBLY

William B. Kindred, 14659 Horger, Allen Park, Mich.

Filed Oct. 8, 1969, Ser. No. 864,582
Int. Cl. H01h 67/00
U.S. Cl. 335—107 16 Claims



An electromagnetic switch for monitoring the current-carrying capability of a load device such as a headlamp and energizing an alarm device in the event the load device fails to conduct current. The switch comprises a magnetic core and a winding connected serially between the load device and a source. A pivotal armature is biased away from the core to close a circuit from the source through the core and the armature to the alarm device when the winding is deenergized. A double switch assembly operating a single alarm is also disclosed.

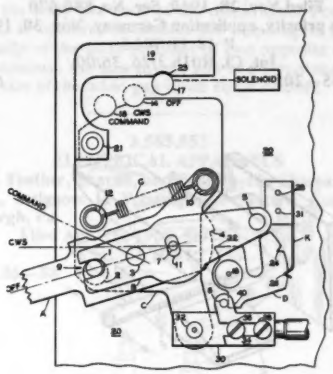
3,585,543

THREE POSITION SWITCH

Andrew R. Taylor, Fairlawn, N.J., assignor to The Bendix Corporation

Filed Dec. 29, 1969, Ser. No. 888,691
Int. Cl. H01h 9/20
U.S. Cl. 335—169 7 Claims

A three position toggle switch is locked by a deenergized solenoid in a first or "off" position. The switch cannot be moved to a second position until the solenoid is energized, and cannot be moved beyond the second position or to a third position until hand pressure is removed from the toggle to release a mechanical lock, after which the solenoid is manually overridden for movement to the third position.

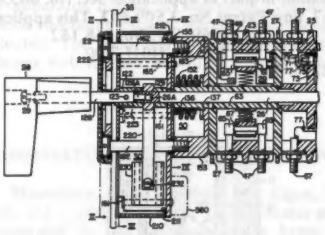


3,585,544

SWITCH HAVING MAGNETIC LATCHING MEANS

Charles M. Cleaveland, Monroeville, and Wesley L. McKeithan, Pittsburgh, both of, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 30, 1969, Ser. No. 862,427
Int. Cl. H01h 9/20
U.S. Cl. 335—170 9 Claims



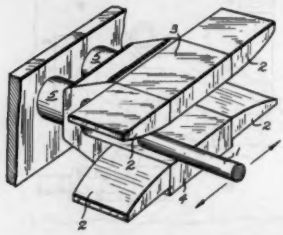
A rotary switch with separable stationary and movable contacts and having a shaft which is rotatable to actuate the movement of the movable contacts between first and second operating positions. A spring return mechanism biases the shaft toward a first angular position corresponding to the first operating position of the movable contacts. A lever arm is mounted on the shaft for movement therewith and carries a magnetic armature. A stationary magnetic structure is disposed adjacent to the shaft and includes a permanent magnet member. When the shaft is rotated to a second angular position which corresponds to the second operating position, the magnetic armature engages or seats against the stationary magnetic structure and the magnetic flux from the permanent magnet member passes through the armature to magnetically latch the shaft in the second angular position against the influence of the spring return mechanism. An electromagnetic coil or winding is disposed on the stationary magnetic structure and is energizable to provide a magnetic flux which opposes the magnetic flux which passes through the armature from the permanent magnet member to thereby release the armature and the shaft which is then actuated to the first angular position by the spring return mechanism.

3,585,545

PROXIMITY LIMIT SWITCH

Max Bauer, Offenhausen, Germany, assignor to Hans Lingl Maschinenfabrik GmbH, Germany

Filed Nov. 28, 1969, Ser. No. 880,670
Claims priority, application Germany, Nov. 30, 1968, P 18 11 904.5
Int. Cl. H01h 3/16, 36/00
U.S. Cl. 335—205 6 Claims



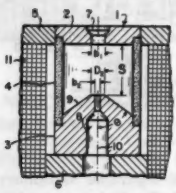
This specification describes a proximity electrical limit switch which is operated by a change in magnetic field strength caused by passing a metal cam or other object in the proximity of magnetically controlled electrical contacts. The switching action is made reliably responsive to even inaccurately guided cams by the use of a U-shaped switch body construction including special wing-shaped guiding structures and a flexible switch body mounting.

3,585,546

OBJECTIVE LENS POLE PIECES

Takashi Yanaka, and Kohei Shirota, both of Tokyo, Japan, assignors to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of application Ser. No. 663,678, Aug. 28, 1967, now Patent No. 3,509,503. This application Oct. 21, 1969, Ser. No. 868,152
Int. Cl. H01f 7/00
U.S. Cl. 335—210 3 Claims



Magnetic lens having pole pieces in which the diameter of the aperture of the upper pole piece and the diameter of the face of the lower pole piece are smaller than the gap between the pole pieces and in which the lower pole piece has at least one frustoconically tapered sidewall.

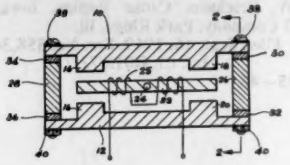
3,585,547

ELECTROMAGNETIC FORCE MOTORS HAVING EXTENDED LINEARITY

Oded E. Sturman, Arleta; Abdul R. Kassir, San Gabriel, and Salvatore A. Sciortino, North Hollywood, all of, Calif., assignors to Bell Aerospace Corporation

Filed July 15, 1969, Ser. No. 841,862
Int. Cl. H01f 7/13
U.S. Cl. 335—227 5 Claims

An improvement in electromagnetic force motors in which linearity of the force versus input signal characteristic is extended. Discrete sections of magnetically saturable material are inserted in the flux path between the frames and permanent magnets and have induction/magnetic force characteristics different from the characteristic of the frame material to obtain magnetic saturation paths thereat.

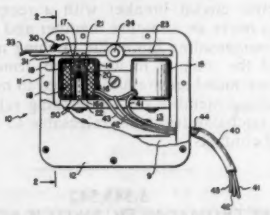


3,585,548

TELETYPEWRITER SELECTOR MAGNET

Stuart M. Phelps, and ERNEST R. Tudor, both of Rochester, N.Y., assignors to the United States of America, as represented by the Secretary of the Army

Filed Feb. 27, 1970, Ser. No. 15,113
Int. Cl. H01f 7/13
U.S. Cl. 335—266 3 Claims



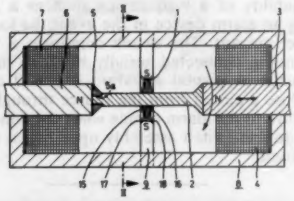
A teletypewriter selector magnet, shielded by a housing, has a pair of electromagnets each having a radial airgap, which are mounted below opposed ends of a rotatably mounted armature. An extension of nonmagnetic material is joined to one end of the armature and extends from the housing through a slot formed therein. Shielded conductors are connected to the coils of the electromagnets to selectively energize the magnets and thereby rotate the armature in opposite directions.

3,585,549

METHOD AND DEVICE FOR MAGNETIZING ANNULAR DISCS IN RADIAL DIRECTION

Kathe Muller, Spindelmuhler Weg 30, 1000 Berlin 45, Germany

Filed Aug. 22, 1969, Ser. No. 852,299
Claims priority, application Switzerland, Aug. 22, 1968, 12596
Int. Cl. H01f 13/00
U.S. Cl. 335—284 11 Claims



A method of radially magnetizing an annular disc includes covering a part of at least one flat face of the disc with a ring of soft-magnetic material having a diameter not greater than the inner diameter of the disc and having an outer diameter less than that of the disc and magnetic flux is passed radially through the disc between the outer and inner circumferential areas. The ring is removed from the disc and magnetic flux is again passed radially through the disc.

Device for carrying out the method includes a magnetic coil for generating a magnetic field. The coil has a core for conducting the flux of the field. A mandrel of magnetically permeable material mechanically engages the core and accommodates the disc and ring in the magnetic field. The core has a peripheral surface of which a portion is spaced from the mandrel. A yoke of magnetically permeable material is provided and magnetically communicates with the core of the surface portion of the latter spaced from the mandrel. The yoke conducts the flux to the outer peripheral surface of the annular disc to be magnetized.

3,585,550

OBJECT HAVING SHARP MAGNETIC DIVISIONS

Gerhard Dorsch, Weibenbrunn, and Wolfgang Wagnerberger, Nurnberg, both of, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Munich, Germany

Filed Aug. 27, 1969, Ser. No. 853,359
Claims priority, application Germany, Sept. 6, 1968, P 17 64 934.2
Int. Cl. H01f 7/02
U.S. Cl. 335—302 **4 Claims**

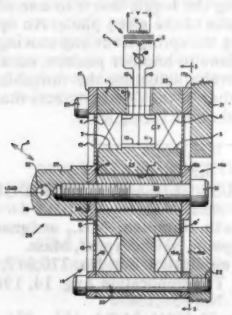
One of a pair of interlocking components of a desired configuration is magnetized with a first substantially planar surface of N polarity and a second spaced opposite substantially planar surface of S polarity. The other of the pair of interlocking components is magnetized with a first substantially planar surface of S polarity and a second spaced opposite substantially planar surface of N polarity. The interlocking components are assembled in a manner whereby their first surfaces are coplanar and present alternate magnetic polarities and their second surfaces are coplanar and present alternate magnetic polarities.

3,585,551

LOAD CELL CONSTRUCTION

George Scourtes, Detroit, Mich., assignor to Wilson Engineering, Inc., Saginaw, Mich.

Filed Apr. 7, 1969, Ser. No. 813,895
Int. Cl. H01f 21/06
U.S. Cl. 336—30 **10 Claims**



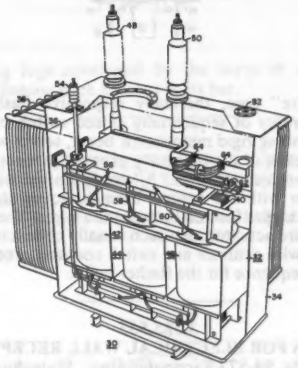
A load cell comprising a cylindrical magnetic body provided with an axial bore therethrough and an annular groove in each end. Accommodated in each groove is an electrical winding and overlying each winding is a resilient, magnetic diaphragm. A tubular spacer is accommodated in the bore and abuts each of the diaphragms. The axial length of the body adjacent the bore is less than that adjacent the peripheral edge of the body so as to provide an axial gap between the body and each of the diaphragms. Force applying means is operable to deflect the diaphragms simultaneously axially of the body in either of two opposite directions so as to diminish the size of one gap and simultaneously enlarge the size of the other gap by an equal amount.

3,585,552

ELECTRICAL APPARATUS

Landis E. Feather, Sharon, and Paul Voytik, Sharpsville, both of, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 10, 1969, Ser. No. 815,037
Int. Cl. H01f 27/32
U.S. Cl. 336—58 **14 Claims**



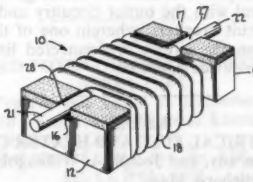
Electrical apparatus having an electrical conductor insulated with solid insulating means, which is impregnated with a liquid dielectric. The solid insulating means includes paper having a fibrous web formed of wholly aromatic polyamide fibers.

3,585,553

MICROMINIATURE LEADLESS INDUCTANCE ELEMENT

William L. Muckelroy, and Marshall M. Algor, both of Washington, D.C., assignors to the United States of America as represented by the Secretary of the Army

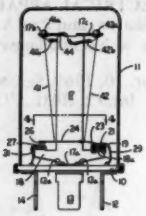
Filed Apr. 16, 1970, Ser. No. 29,191
Int. Cl. H01f 15/10
U.S. Cl. 336—192 **4 Claims**



A leadless inductance element. The element comprises a nonconductive core adapted to receive a wire winding and having first and second flanges located at the terminal portions of the core to confine the wire winding to the core. The end face of each of the flanges is flattened and an electrically conductive coating is applied to provide electrical contact with the substrate. A groove is located in each of the flanges and is adapted to receive the terminal portions of the wire

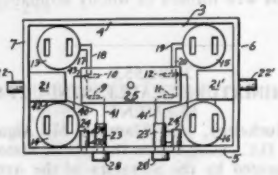
winding. Finally an electrically conductive path connects the terminal portions of the wire winding with the flattened electrical contacts at the two flanges.

3,585,554
SEQUENTIAL FLASHER CONTROL SWITCH
Cleon F. Frey, Sebastian, Fla., assignor to International Flasher Corporation, Bayamon, P.R.
Filed Nov. 12, 1969, Ser. No. 875,867
Int. Cl. H01h *37/04, 37/50*
U.S. Cl. 337—138 **4 Claims**



A "hot-wire" type, thermally responsive flasher switch having a plurality of sequentially closed switch contacts. A central, extending rigid member, or beam, serves as the fixed terminus of each of the thermally expansible wires and these are arranged to extend in an "X" configuration with relation to each other with the central beam bisecting the two opposite, acute angles formed between the wires. The thermally expansible wire actuators are each serially connected, electrically, to the wire actuator and switch contacts preceding it in the lighting sequence for the flasher bulbs.

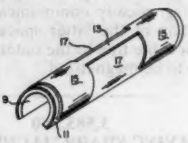
3,585,555
ADAPTERS FOR ELECTRICAL WALL RECEPTACLES
Kingo Yamada, 94-877 Farrington Hwy., Waipahu, Hawaii
Filed Mar. 16, 1970, Ser. No. 19,968
Int. Cl. H01h *85/02*
U.S. Cl. 337—187 **7 Claims**



A protective electrical arrangement for use in conjunction with a wall receptacle or similar outlets of the female type commonly employed in homes and buildings. The protective device is integral with the outlet circuitry and consists of a plurality of circuit breakers, wherein one of the breakers is adapted to open the circuit or connected line before any other protective device operates.

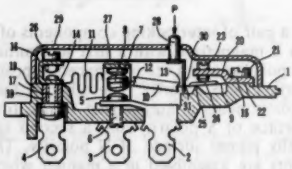
3,585,556
ELECTRICAL FUSE AND HEATER UNITS
Ashok R. Hingorany, and Joseph A. Willoughby, both of, 34 Forest St., Attleboro, Mass.
Filed July 22, 1969, Ser. No. 843,690
Int. Cl. H01h *85/14*
U.S. Cl. 337—297 **5 Claims**

An electrical fuse unit is shown to comprise a composite material embodying a layer of resilient metal sheet material, an electrically insulating sheet material arranged substantially coextensive with and bonded to a sheet surface of the metal sheet material, and at least one electrically conductive fuse element of selected thickness bonded to the insulating sheet material, the fuse element having a pair of terminal portions of selected width electrically interconnected by an intermediate fuse portion of relatively smaller width which is fusible in response to the passage of selected electrical current through the fusible portion. The composite material has a portion formed into semicylindrical shape and has parts of



the terminal portions of the fuse element disposed on opposite sides of the semicylindrical portion of the composite material. In this arrangement, the fuse unit is adapted to be disposed between a pair of electrical contact means for resiliently engaging the fuse terminal portions with respective contact means.

3,585,557
SNAP ACTION SWITCH
Jorgen Jorgensen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark
Filed Nov. 1, 1968, Ser. No. 772,661
Claims priority, application Germany, Nov. 2, 1967, P 16 15 992.5
Int. Cl. H01h *37/52*
U.S. Cl. 337—345 **8 Claims**

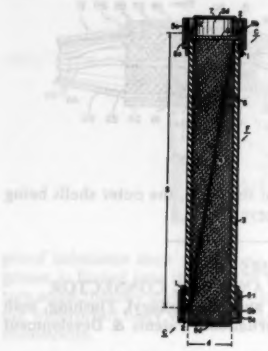


A snap action switch system actuating a movable switch contact into alternative contact with two fixed electrical switch contacts by two longitudinally rigid toggle levers pivotal relative to each other about a pivot actuated to two positions opposite a given plane through which the levers pass. The system has a longitudinally flexible arm so that as the rigid toggle levers pass the given plane the flexible arm is flexed longitudinally and the movable contact transported by the system effects a wiping and release action relative to one of the fixed contacts with which it is in contact before effecting a snap action switching action under control of a spring lever biased for actuating the toggle levers to one of the two positions on opposite sides of the given plane. An operator is provided for overcoming the spring lever and moving the toggle levers across said plane to another position on a side opposite to the plane thereby actuating the movable contact into contact with the other of the fixed contacts than that to it contacts under control of the spring lever.

3,585,558
REJECTION TYPE FUSE CLIP AND CARTRIDGE FUSE ASSEMBLY
Kenneth W. Swain, North Hampton, N.H., assignor to The Chase-Shawmut Company, Newburyport, Mass.
Continuation-in-part of application Ser. No. 770,317, Oct. 24, 1968, now abandoned. This application Aug. 14, 1969, Ser. No. 850,156
Int. Cl. H01h *85/24*
U.S. Cl. 337—226 **8 Claims**

A rejection type fuse clip and fuse assembly wherein each of the caps of the fuse includes a cylindrical contact surface engaged by the cooperating contact surface of a fuse clip, and annular end surface, a cylindrical projection extending

axially outwardly from said annular end surface and having a smaller diameter than said cylindrical contact surface, and a



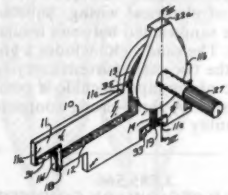
circular end surface closing the axially outer end of said cylindrical projection.

3,585,559

VARIABLE RESISTANCE CONTROL

Arthur L. Rozema; Wayne A. Barden, and Wilbert H. Budd, all of Elkart, Ind., assignors to CTS Corporation, Elkhart, Ind.

Filed Dec. 9, 1968, Ser. No. 782,031
Int. Cl. H01c *9/02*
U.S. Cl. 338—48 12 Claims



A ceramic substrate supports a plurality of moisture resistant cermet film resistive paths having a uniform temperature coefficient of resistance, a center collector, a contactor wipingly engaging the collector and a resistive path, and a contactor driver having a stub shaft with an enlarged portion thereof bearing against the substrate. Terminations on the substrate comprise conductive pads disposed adjacent to passageways in the substrate and a protective layer of solder deposited over such pads. In a variable voltage divider embodiment, a surge limiting resistive path is provided between the collector and an output termination to reduce the magnitude of high frequency, high potential pulses applied to the output termination of the divider.

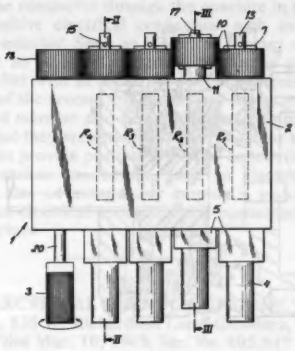
3,585,560

MULTISTAGE POTENTIOMETER

Herbert Schlesier, Marienburg, Germany, assignor to Friedrich Petrick GmbH, Salinenstrasse, Bad Salzdetfurth, Germany

Filed Oct. 24, 1969, Ser. No. 868,993
Claims priority, application Germany, Oct. 26, 1968, P 18 05 534.0
Int. Cl. H01c *1/16*
U.S. Cl. 338—131 10 Claims

Several resistance strips carried alongside one another on the underside of a potentiometer plate are engageable by respective sliders driven by individual leadscrews which are normally decoupled from a driving gear train and can be selectively coupled thereto by pusher bars and brackets straddling the corresponding gears to shift them into an engaged position. The brackets are loosely mounted on their pusher bars and, like the latter, are provided with pairs of confronting lugs enveloped by the turns of a coil spring resiliently linking each bracket to its bar.

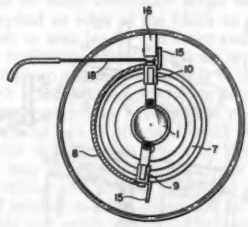


3,585,561

RESTORING POTENTIOMETER FOR A SERVOMOTOR

Kristian Iversen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed July 15, 1969, Ser. No. 841,820
Int. Cl. H01c *5/08*
U.S. Cl. 338—150 6 Claims



The invention relates to a restoring potentiometer for a servomotor having a movable output member. The resistor element of the potentiometer comprises a helical coil of spring wire and retaining means are provided for adjustably positioning one or both ends of the spring so that the full potentiometer resistance can be utilized for any size of working range. The retaining means can also be used to actuate a limit switch.

3,585,562

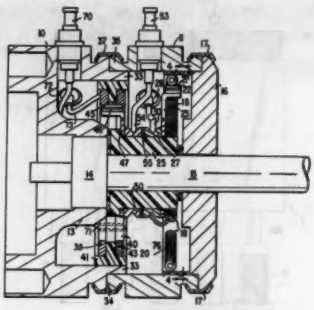
COMBINED POTENTIOMETER AND SWITCHING STRUCTURE

Charles M. Tygard, and James H. Cameron, both of West Covina, Calif., assignors to Spectrol Electronics Corporation, City of Industry, Calif.

Filed May 28, 1969, Ser. No. 828,617
Int. Cl. H01c *5/08*
U.S. Cl. 338—172 5 Claims

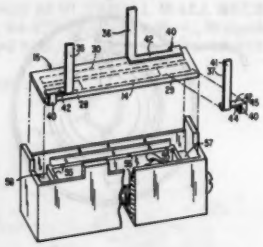
A combined potentiometer and switching structure including wiper contacts fixed to a shaft and having contacting engagement with an annular resistor and a pair of switching rings. The wiper contacts are located coincident, or in phase relation. The switching rings are each provided with an interrupted area, such areas are located in an arc complemental to the arc of the resistor and are circumferentially spaced apart a distance not greater than the length of the resistor contacting surface whereby, during rotation of the shafts, circuits connected to the switch rings are opened at different

positions with respect to the resistor wiping contact. Alignment openings in the rings accommodate a pin to permit proper positioning of the rings relative to one another and



also provide a passage for a conductor upon removal of the pin once the rings are properly positioned and secured against displacement.

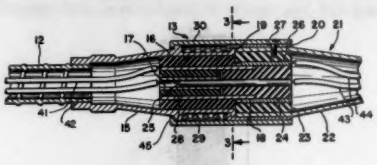
3,585,563
VARIABLE RESISTOR CONSTRUCTION HAVING SPRING TERMINAL CLIPS SURROUNDED BY A POTTING AGENT
Kenneth L. Hegle, Temple City, Calif., assignor to Spectrol Electronics Corporation, City of Industry, Calif.
Filed July 7, 1969, Ser. No. 839,349
Int. Cl. H01c *9/02*
U.S. Cl. 338—180 **5 Claims**



A potentiometer having a hollow housing containing a continuous recessed shoulder and a pair of axially spaced recessed cavities adjacent opposite ends thereof. A lead screw and associated wiper element are disposed within the housing. An axially extending resistance element and a parallel collector track are deposited on a substrate member. A plurality of electrical terminals having spring clip portions are clipped to the terminations of the resistance element and to the collector track to make electrical contact therewith. The resistance substrate is positioned in the housing so that it rests on the recessed shoulder with the spring clip portions of the terminals lying within the recessed cavities. A potting agent, such as epoxy resin, fills the recessed cavities and extends over the outer face of the substrate to completely seal the substrate to the housing and to encapsulate the terminals.

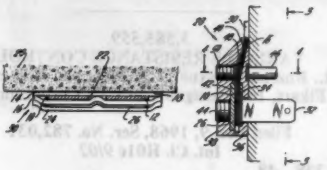
3,585,564
SWIVELING ELECTRICAL CONNECTOR
Olav Skjervoll, 4053 Lowerre Place, Bronx, N.Y.
Filed Jan. 8, 1969, Ser. No. 789,870
Int. Cl. H01r *39/00*
U.S. Cl. 339—8 **4 Claims**

An electrical connector has two parts which may be axially rotated relative to each other, the parts having a central pin and a tubular seat therefor and a projecting concentric contact and a concentric annular receiver therefor, the pin and its seat and the concentric contact and its receiver being in-



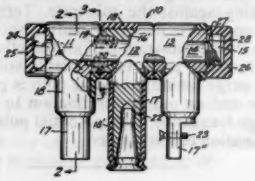
sulated within outer shells of the parts, the outer shells being rotatably connected by a sleeve.

3,585,565
ELECTRICAL TAPE AND PLUG CONNECTOR
Howard Price, Kings Point, and Bela Szilagyi, Flushing, both of, N.Y., assignors to International Patents & Development Corporation
Filed Aug. 16, 1968, Ser. No. 753,229
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 **6 Claims**



An electrical tape and plug connector to facilitate simplified installation of electrical wiring. Substantially flat or film conductors are sandwiched between insulating layers of protective material. The sandwich includes a ground conductor insulated from the two main current carrying conductors. One surface of side of the tape or cable is coated with pressure-sensitive adhesive. A three-prong connector adapts the tape or cable to a utility outlet.

3,585,566
MODULAR SECONDARY CONNECTOR
James A. Sievert, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Sept. 23, 1969, Ser. No. 860,228
Int. Cl. H01r *11/02*
U.S. Cl. 339—22 **7 Claims**

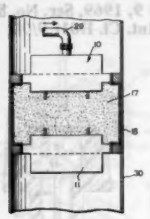


Modular insulated connector for add-on underground residential distribution systems.

3,585,567
APPARATUS AND METHODS FOR CONNECTING AND DISCONNECTING ELECTRICAL CIRCUITS UNDERWATER
Delbert R. Wofford, P.O. Box 1160, Owensboro, Ky.
Filed Aug. 28, 1969, Ser. No. 862,599
Int. Cl. H01r *13/54, 13/62*
U.S. Cl. 339—45 **8 Claims**

Structure is disclosed for assembling connectors under sea water or in other hostile environments and isolating the junc-

tion from the surrounding water. A flexible barrier portion is fitted to envelop the junction, and any water inside the barrier is purged by the flow of a fluid such as a liquid, air or gas therethrough. The barrier portion is then filled with water-



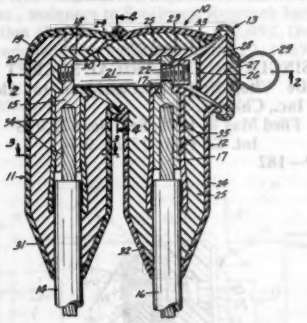
proof substance such as silicone grease. To disconnect, the grease is forced into the flexible barrier to push the connectors apart thereby surrounding each portion with an enveloping waterproof body when the barrier is severed between the connectors.

3,585,568

SPLICE COVER AND SPLICE ASSEMBLY

Harold C. Hervig, Maplewood, and Roy D. Erickson, St. Paul, both of, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sept. 25, 1969, Ser. No. 860,898
Int. Cl. H01r *13/52*
U.S. Cl. 339—60 **4 Claims**



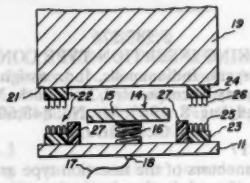
Modular high voltage junction or splice assembly useful in underground electrical distribution system employs an elastomeric modular cover having close fitting conical plug-and-socket connections between modules, the plugs having a greater angle with the axis than do the sockets.

3,585,569

ELECTRICAL CONTACT CLOSURE

Paul J. Moran, Ballston Lake, N.Y., assignor to General Electric Company

Filed Sept. 2, 1969, Ser. No. 854,419
Int. Cl. H01r *13/54, 13/52*
U.S. Cl. 339—75R **3 Claims**



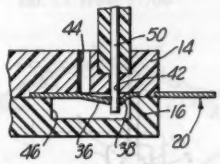
An electrical contact closure has at least one electrical conductor, a member having at least one opening therein sealed to the surface of the conductor, the exterior surface of the member being adhesive for removable contact with an adjacent electrical conductor. The electrical conductor has a contact portion or an attachment which protrudes from the surface of the conductor through the aperture in the member to make positive electrical connection with an associated electrical conductor. Such an electrical contact closure may also include an adjacent electrical conductor which has a similar member with at least one opening therein affixed to the surface of the second conductor and the exterior surface of the second member also being adhesive. The members are aligned so that they are removably held together to provide a closure and to provide positive electrical connection between adjacent electrical conductors. Such an electrical contact closure can also advantageously employ a gasket which is bonded to the electrical conductor and positioned within the member aperture.

3,585,570

ELECTRICAL TERMINAL ASSEMBLY

John T. Jans, 535 W. Richardson Lane, Glendora, Calif.

Filed Mar. 10, 1969, Ser. No. 805,647
Int. Cl. H01r *9/12*
U.S. Cl. 339—95 **4 Claims**



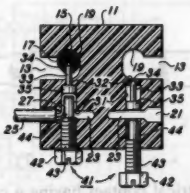
An electrical terminal assembly having a terminal block mounting one or more conductor strips with exposed ends projecting beyond an edge of the block to provide terminals for attachment to wire leads. The inner end of each conductor strip has resiliently flexible portions separated by a narrow intervening gap aligned with a hole in the terminal block through which a second wire lead may be inserted into frictional gripping engagement between the corresponding strip portions. A second hole is provided in the terminal block for each conductor strip through which an implement, such as another wire, may be inserted to deflect one strip portion in a direction to release the second lead. The terminal block is composed of mating molded plastic block members which may be quickly and easily assembled in interlocking relation with the conductor strips to provide a finished terminal assembly.

3,585,571

ELECTRIC WIRE CONNECTOR WITH INSULATION PIERCING MEANS

Raymond G. Davis, Box 44, and Jacob H. Fonda, R.D. 1, both of Canandaigua, N.Y.

Filed Apr. 24, 1969, Ser. No. 818,922
Int. Cl. H01r *7/12, 11/20*
U.S. Cl. 339—97 **7 Claims**



A device for electrically connecting a pair of main supply wires to a pair of lateral branch wires without stripping insulation from the main wires. A block of insulating material has

two parallel grooves which receive the main wires and their insulating covering. Adjacent each main wire is a bore extending radially with respect to the main wire, the bore containing a sharp pointed metallic conducting element. The bore containing the pointed metallic element intersects a lateral bore into which the stripped end of the branch wire is placed. A screw of insulating material bears against the stripped end of the lateral wire, presses it tightly against the butt end of the pointed metallic element and drives the point thereof through the insulation covering of the main wire, to make contact with the metallic conductor therein.

3,585,572

CLIP CONNECTOR TERMINAL FOR INSULATED CONDUCTORS

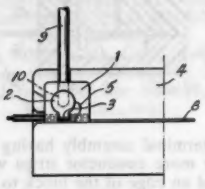
Heinz Krone, Asperg; Wilhelm Hoffmann, Ludwigsburg; Rolf Autenrieth, Asperg; Joachim Rott, Berlin, and Lothar Zerrenner, Berlin, all of, Germany, assignors to Krone G.m.b.H., Ludwigsburg, Germany

Filed Apr. 24, 1969, Ser. No. 818,999

Claims priority, application Germany, Apr. 24, 1968, P 17 65 250.5

Int. Cl. H01r *9/06*; H02g *15/08*

U.S. Cl. 339—97 **5 Claims**



Between two relatively movable parts of a clip connector there is inserted an insulated electric conductor which, as said parts are moved into a closed position, is stripped by virtue of cooperating shearing edges of said parts. In its closed position, the clip connector securely clamps the stripped conductor in a gap defined by the two parts.

3,585,573

SLIDING ELECTRICAL CONTACT

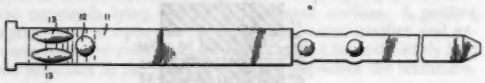
Norman Robshaw, Chestfield, Kent, England, assignor to The Bunker-Ramo Corporation, Oakbrook, Ill.

Filed Oct. 17, 1968, Ser. No. 768,285

Claims priority, application Great Britain, Oct. 17, 1967, 47285/67

Int. Cl. H01r *13/26*

U.S. Cl. 339—176 **9 Claims**



A sliding electrical contact having a contact button on an arm in which transfer of material from the arm to the button by a wiping action during operation is prevented by recessing or cutting away the part of the arm from which wiping occurs or lifting it clear of the wiping surface by means of projections on the arm.

3,585,574

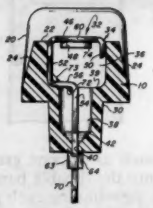
TURRET TERMINAL BOARD

William B. Drapkin, Brooklyn, and James F. Sullivan, Eastchester, both of, N.Y., assignors to Kulka Electric Corporation, Mount Vernon, N.Y.

Filed July 9, 1969, Ser. No. 840,411

Int. Cl. H01r *9/00*

U.S. Cl. 339—198 **10 Claims**



A terminal board has a plurality of stations each having a passage in which a terminal element is mounted. Each passage opens up at the bottom thereof in the form of a slot and the terminal element has a lug which passes through the slot. Opposed tabs on the terminal element are adapted to be deformed by twisting out of the general plane of the slot so that pointed projections on the tabs will engage the sidewalls of the slot to rigidly secure the terminal element to the terminal board. An end plate having similar barbs may be mounted in the passages of the end stations to facilitate mounting the terminal board on a chassis.

3,585,575

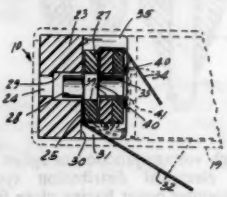
SINGLE PIN ELECTRICAL SOCKET

Albert P. De Vito, Niles, Ill., assignor to Alcon Metal Products, Inc., Chicago, Ill.

Filed May 8, 1969, Ser. No. 822,915

Int. Cl. H01r *17/18*, *9/14*

U.S. Cl. 339—182 **13 Claims**



A single pin electrical socket has a dielectric socket body with a plug pin-receiving opening entering from one end of the body. A plurality of electrical contacts, each of which has a contact arm extending generally from the opposite end of the body and respective jack terminal pieces, is mounted on the body by dielectric isolating means which separate the contacts and support the jack terminal pieces thereof in spaced series alignment with the pin-receiving opening to respectively receive aligned terminal contacting portions of a single pin of an electrical plug inserted into the opening.

3,585,576

SELF-LOCKING INSERTION-TYPE CONNECTOR

Benjamin E. Meyers, Indianapolis, Ind., assignor to Western Electric Company, Incorporated, New York, N.Y.

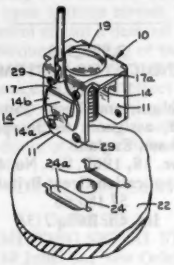
Filed Aug. 8, 1969, Ser. No. 848,609

Int. Cl. H01r *9/08*

U.S. Cl. 339—217 **15 Claims**

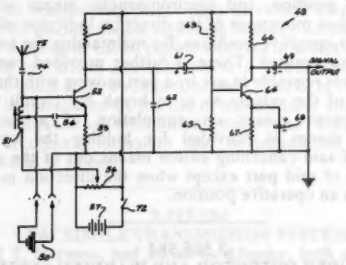
Electrical connectors of the insertion type are made out of sheet or coil stock and, in the simplest versions of all of the various embodiments thereof, are each formed into a U-shape so as to have at least two parallel extending and substantially planar leg portions and an integral intermediate

planar portion. A peculiar T-shaped protuberance is formed in each leg portion of the connector, and functions not only as a fastening detail for a spade-tip terminal, but also as a locking detail when the legs of the connector are inserted



within appropriately aligned apertures of an associated support member. The intermediate planar portion is preferably die-worked to form any one of a number of fastening details therein, such as a die-formed single thread opening, a solder lug or a T-shaped spade-tip terminal receiving protuberance.

3,585,577
ULTRASONIC TRANSCEIVER
William L. Rollwitz, and Harvey S. Benson, both of San Antonio, Tex., assignors to Southwest Research Institute
Continuation of application Ser. No. 672,091, Oct. 2, 1967, now abandoned. This application June 12, 1969, Ser. No. 834,236
Int. Cl. G01s 9/66
U.S. Cl. 340—1 **5 Claims**

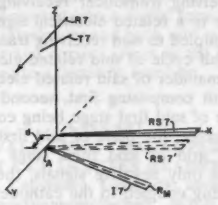


Simplified ultrasonic transceiving apparatus preferably incorporating transducer means coupling ultrasonic vibrations into a medium, said means being bidirectional in operation to also convert vibrations from the medium into electrical signals; an oscillatory signal applied to said transducer means for propagation into the medium, and means forming an output signal combining the oscillatory signal and vibrations received from within the medium into an electrical signal.

3,585,578
SIDE LOOKING SONAR APPARATUS
Raymond C. Fischer, Jr., Severna Park, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Apr. 21, 1969, Ser. No. 818,006
Int. Cl. G01s 9/66
U.S. Cl. 340—3 **6 Claims**

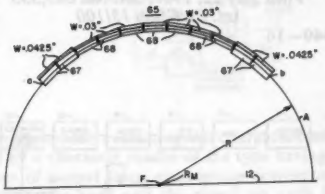
Side looking sonar transmitter transducer and receiver transducer positioned relative to one another so that maximum intensity of acoustic energy reflected from a target area is detected during the course of travel of the side looking sonar apparatus.

The transmitter and receiver transducers include elongated transducer active elements each comprised of a series of



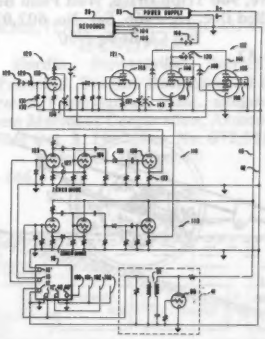
smaller active elements positioned end to end, each smaller element being positioned within a mounting block providing depression angle orientation.

3,585,579
SIDE LOOKING SONAR TRANSDUCER
John A. Dorr, Baltimore, Md., and John H. Thompson, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed July 9, 1969, Ser. No. 840,163
Int. Cl. H04r 17/00
U.S. Cl. 340—9 **13 Claims**



A side looking sonar transducer having an elongated active radiating, or receiving, surface which is wider at the ends of the transducer than at the middle. This arrangement provides an energy distribution which allows for a greater depth of focus.

3,585,580
ACOUSTIC LOGGING SYSTEM UTILIZING FIRST HALF-CYCLE OF RECEIVED SIGNAL
Charles B. Vogel, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.
Continuation of application Ser. No. 128,167, July 31, 1961. This application Dec. 13, 1965, Ser. No. 520,021
Int. Cl. G01v 1/40
U.S. Cl. 340—15.5 **2 Claims**



1. An acoustical logging system for logging formations penetrated by a borehole, said system comprising: a downhole instrument having at least a transmitting trans-

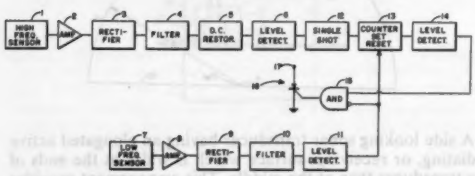
ducer and a receiving transducer; said transducers being spaced from each other; circuit means for energizing said transmitting transducer to generate a series of acoustical waves, said receiving transducer receiving said pulses and converting them to a related electrical signal; an amplifying circuit means coupled to said receiving transducer for amplifying the first half cycle of said related electrical signal and blocking the remainder of said related electrical signal, said amplifying circuit comprising first, second and third triode stages, the plate of said first stage being coupled to the grid of said second stage, the plate of said first stage also being coupled to the grid of said third stage through a diode disposed to pass only negative signals, the cathode of said second stage being coupled to the cathode of the first stage through a Zener diode, said Zener diode being biased to pass the second half cycle of said related electrical signal to the first stage to apply a positive voltage to the cathode thereof of sufficient magnitude to cause said first stage to cut off; a transmission circuit coupled to said amplifying circuit means for transmitting the amplified first half cycle signal to a surface recording means.

3,585,581

SEISMIC SENSOR APPARATUS

Kenneth E. Aune, Burnsville; Gerald F. Jacobs, New Hope, and Gary W. Spence, New Hope, all of, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed July 22, 1969, Ser. No. 843,335
Int. Cl. G08b *13/100*
U.S. Cl. 340—16 **5 Claims**



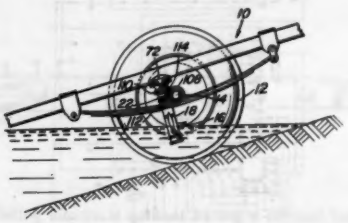
Discriminating, range limited, seismic sensor apparatus particularly applicable to intrusion detection systems. The preferred embodiment of the invention provides discrimination between vehicular and personnel travel in the area of the sensor. Discrimination and range limiting is provided by sensing seismic disturbances at two frequencies, relying upon the frequency-dependence of attenuation of seismic waves.

3,585,582

SIGNAL DEVICE FOR A BOAT TRAILER

Robert A. Dove, 960 Tripp Drive, West Palm Beach, Fla.

Filed Dec. 15, 1966, Ser. No. 602,076
Int. Cl. B60q *1/00*
U.S. Cl. 340—52 **9 Claims**



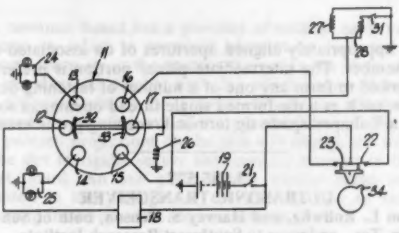
A signal device for a boat trailer having a housing attached to the axle of a boat trailer by an elastic member and a float, battery assembly and horn assembly mounted in the housing with the float closing an energizing circuit from the battery assembly to the horn assembly when the wheels on the axle reach a certain point in a body of water during launching of a boat carried by the trailer to alert the operator of the towing vehicle and prevent water from coming into contact with the wheel bearings.

3,585,583

DIRECTION INDICATOR SYSTEMS FOR ROAD VEHICLES

Derek Thornley, Nelson, and Leslie James Nevett, Whalley, both of, England, assignors to Joseph Lucas Industries Limited, Birmingham, England

Filed Dec. 18, 1967, Ser. No. 691,431
Claims priority, application Great Britain, Dec. 21, 1966, 57,180/66
Int. Cl. B60q *1/38*
U.S. Cl. 340—55 **1 Claim**



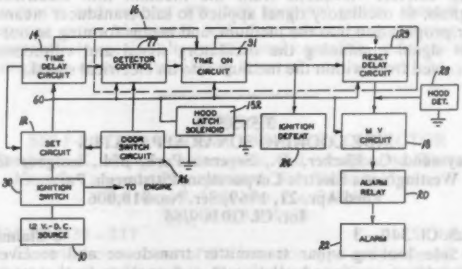
A direction indicator switch for a road vehicle in which a manually operable direction indicator switch is movable from a neutral position to either of a pair of operative positions respectively whereby indicator lamps on opposite sides of the vehicle respectively are energized. The indicator switch includes resilient means urging the direction indicator switch to its neutral position, and electromagnetic means which is operable upon movement of the direction indicator switch to either of its operative positions, for maintaining the switch in its operative position. There is further provided cancelling switch means operable in use by a part moving with the steering wheel of the vehicle so as to break the circuit to said electromagnetic means on completion of a turn and moreover means is provided for holding the operating member of said cancelling switch means out of the path of movement of said part except when the direction indicator switch is in an operative position.

3,585,584

INTRUDER DETECTOR AND WARNING SYSTEM

Gene E. Behrend, 3600 W. Buena Vista, Fresno, Calif.

Filed Feb. 14, 1969, Ser. No. 799,370
Int. Cl. B60r *25/10, 25/04*
U.S. Cl. 340—64 **17 Claims**



An intruder detector and warning system including transistorized intruder detecting and warning circuits particu-

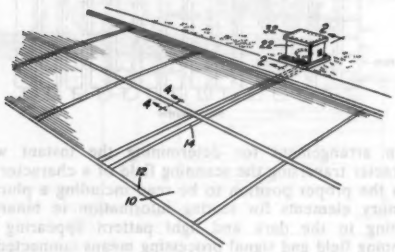
larly suited for use with automobiles of the type including an enclosure having a multiplicity of access doors and an electrical ignition system, a feature of the invention being the provision of control and timing circuits interconnected between the energy source of the ignition circuit and an electrically driven warning device, such as the vehicle's horn, adapted to respond to an opening of a selected door of the vehicle, in the presence of an open ignition circuit, for establishing and imposing on the control circuit a delayed "set" condition and to respond to a subsequent opening of the vehicle's hood, or any door thereof for energizing the control circuit and the associated warning device as well as effect a delayed interruption of the energization of the warning device at the expiration of a predetermined time interval subsequent to the closing of any opened doors of the vehicle, or the closing of an opened hood thereof.

3,585,585

LIGHT TRANSMITTING SIGNAL STRIP ON ROAD

Frank A. Grosz, 2310 Joliet St., New Orleans, La.

Filed May 23, 1969, Ser. No. 827,205
Int. Cl. G08b *5/00*
U.S. Cl. 340—114 **7 Claims**



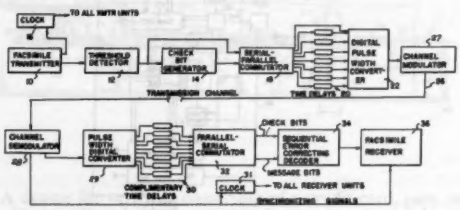
A light transmitting plastic strip or ribbon employed in a system for guiding and/or signalling highway vehicular traffic, people walking in caves, people working in mines and people engaged in various activities where it is desirable to signal them or guide from a remote location. The light transmitting plastic is illuminated by the use of white and/or colored lights in a continuous or intermittent manner so that a desired signal or other information may be transmitted along the plastic strip or ribbon.

3,585,586

FACSIMILE TRANSMISSION SYSTEM

Samuel T. Harmon, and David E. Klingler, both of Ann Arbor, Mich., assignors to Datamax Inc., Ann Arbor, Mich.

Continuation-in-part of application Ser. No. 642,118, May 29, 1967. This application Aug. 28, 1968, Ser. No. 756,007
Int. Cl. G08c *25/00*; **H04m** *11/00*
U.S. Cl. 340—146.1 **23 Claims**



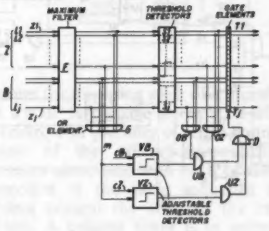
A facsimile transmission system includes a transmitter wherein copy is scanned and a two-value digitized signal is generated. The signal is redundantly encoded and the encoded signal is converted into parallel form and time interleaved. The output of the interleaver is used to generate an analog pulse width modulated signal which is provided to a receiver over a transmission channel. At the receiver the analog signal is converted into a digital form, passed through a complimentary interleaver and back into serial form, and is decoded to detect and correct errors in the transmission before being provided to a facsimile receiver.

3,585,587

DEVICE FOR EVALUATING CHARACTERS IDENTIFIED IN A CHARACTER READER

Hanno Gillmann, Constance, Germany, assignor to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm Donau, Germany

Filed Sept. 19, 1968, Ser. No. 760,844
Claims priority, application Germany, Sept. 20, 1967, P 15 49 928.2
Int. Cl. G06k *9/06*
U.S. Cl. 340—146.3 **7 Claims**



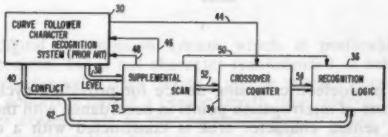
An arrangement for evaluating the character identification performed by a character reader of the type having a plurality of groups of output lines, each group corresponding to a different character type and the signal on each line being proportional to the degree of coincidence between a character which has been read and a particular character pattern, which arrangement includes a threshold value detection unit associated with each character type and connected to all of the character reader output lines for producing an output only when the highest amplitude signal appearing on the lines exceeds the threshold value of that unit, an OR element associated with each group of lines and connected to all of the lines of its associated group for producing an output signal whenever the signal whose amplitude is the highest of the signals appearing on all of the lines appears on one of the lines of its associated group, and gate control means for each group of lines connected to the threshold detection unit and the OR element of its associated group for producing a gate control signal only when a signal is produced by both the unit and the OR element to which it is connected.

3,585,588

SUPPLEMENTARY SCAN LEXICAL SYMBOL IDENTIFIER

William W. Hardin, Stewartville; Patrick J. Hurley, Rochester; Patrick J. Traglia, Rochester, all of, Minn., and Reini J. Norman, Framingham, Mass., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 3, 1967, Ser. No. 672,518
Int. Cl. G06k *9/10*
U.S. Cl. 340—146.3 **4 Claims**



After a curve follower lexical symbol recognition system has completed a character examination and found a conflict

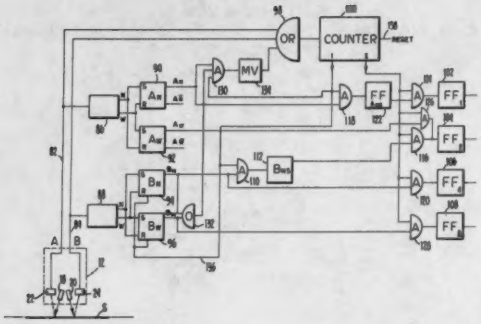
to exist, a supplementary scan of the character is initiated only for resolving the conflict. The scan traverses across the character at a horizontal and/or vertical level at which there is an identification number of crossovers for the particular conflict. The number of crossovers solves the conflict.

3,585,589

NUMERIC FONT AND APPARATUS FOR READING SAME

John J. Reilly, Orinda, Calif., assignor to Binary Systems, Inc., Orinda, Calif.

Filed Oct. 11, 1967, Ser. No. 674,619
Int. Cl. G06k 9/10
U.S. Cl. 340—146.3Z **2 Claims**



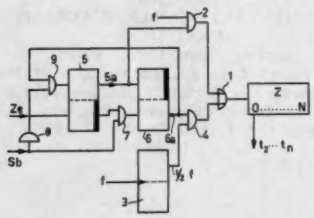
A font of numerals that are of block form so as to be readily readable visually and electrooptically. Apparatus for reading the numerals by optically scanning the numerals at two vertically spaced points. Apparatus for converting the optical scan information to binary coded decimal form by processing the information at two time-spaced intervals.

3,585,590

SENSING CIRCUIT FOR APPARATUS FOR AUTOMATIC CHARACTER RECOGNITION

Hans Hoffman, Friedrichsgabe, and Dieter Poddig, Schenefeld, both of, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 5, 1967, Ser. No. 688,088
Claims priority, application Germany, Dec. 15, 1966, P41004
Int. Cl. G06k 7/016
U.S. Cl. 340—146.3 **2 Claims**



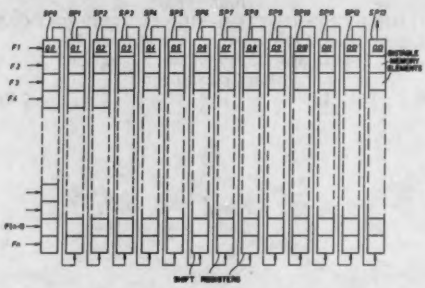
A photoelectric sensing device for providing cyclical indicators of interrogation points in accordance with the width of a sensed character area is constructed with a counter which indicates the first point at the beginning of the first vertical character line of a character, thereby beginning to cycle at a first frequency. At the end of the line, the counter begins again at double the rate. The counter then cycles once between each pair of interrogation points, and the number of zeros emitted by the counter signifies the number of interrogation points.

3,585,591

CIRCUIT ARRANGEMENT FOR DETERMINING THE CORRECT POSITION OF A CHARACTER IN A CHARACTER READER

Paul Hauff, Constance, Germany, assignor to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm Donau, Germany

Filed Aug. 14, 1968, Ser. No. 752,594
Claims priority, application Germany, Aug. 24, 1967, P 15 49 925.9
Int. Cl. G06k 9/04
U.S. Cl. 340—146.3 **6 Claims**



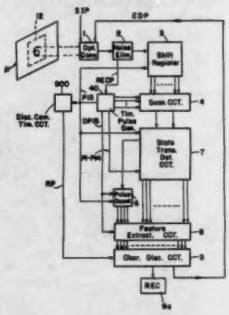
An arrangement for determining the instant when a character traversing the scanning field of a character reader is in the proper position to be read including a plurality of memory elements for storing information in binary form relating to the dark and light pattern appearing in the scanning field and signal processing means connected to the memory elements for producing weighted outputs in each half of the scanning field at spaced intervals and arranged to produce a reading signal when the weighted outputs relating to the two halves of the scanning field differ from one another by less than a predetermined amount.

3,585,592

CHARACTER RECOGNITION SYSTEM WITH CHARACTER EDGE DETECTION CAPABILITY

Kazuo Kiji, and Yukio Hoshino, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Feb. 18, 1969, Ser. No. 800,224
Claims priority, application Japan, Feb. 29, 1968, 43/13062
Int. Cl. G06k 9/10
U.S. Cl. 340—146.3AC **12 Claims**



A system for recognizing and reproducing a preselected numerical character formed in ink on a transparent

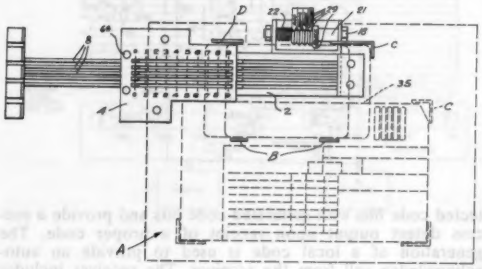
background, including: optical conversion of background and ink portions of the character into "0" and "1" signals, respectively, which are stored in a pattern in a shift register; logic means utilizing the "0" and "1" shift register stored signals row-by-row to produce signals representing particular features of successively scanned segments of the ink; discriminating circuit means selectively energizing certain circuits thereof representing typical segments of a known character corresponding to the scanned character in response to the particular feature signals; and receiving means activated by the selectively energized discrimination circuit means at the end of the utilization of the stored "0" and "1" signals to reproduce the scanned character in terms of the "0" and "1" signal pattern stored in the shift register.

3,585,593

DEVICE FOR IDENTIFYING CODED CREDIT CARDS

Richard H. Roberts, Route 4, Box 368-7, Tallahassee, Fla.

Filed Oct. 8, 1969, Ser. No. 864,803
Int. Cl. H04q *1/00*
U.S. Cl. 340—149 **9 Claims**



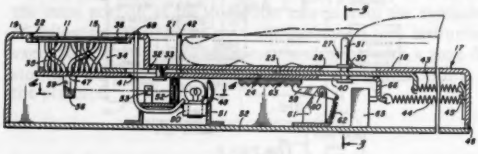
The present device is an attachment for an improvement in credit card writing machines. The device identifies a credit card submitted for use on each machines as being in accordance with information known to the proper owner thereof to prevent the unauthorized use of such cards.

3,585,594

VERIFYING DEVICE FOR CREDIT CARDS OR THE LIKE

Fred N. Schwend, Arcadia, Calif., assignor to Clary Corporation, San Gabriel, Calif.

Filed Sept. 24, 1969, Ser. No. 860,548
Int. Cl. H04q *9/00*
U.S. Cl. 340—149 **9 Claims**



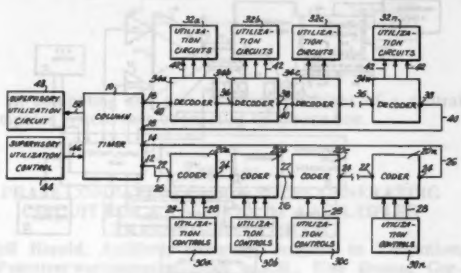
A device for verifying ownership of a credit card, pass, or the like, in which holes are provided indicating, by their position, a code representing the dimensions of certain of the owner's fingers. When the card owner advances his hand against slides carrying optical elements, such elements are aligned with each other and with the holes in the card to pass beams of light from a lamp within the device.

3,585,595

CLOSED LOOP CONTROL SYSTEM HAVING SERIES CONNECTED CODERS

Martin J. Slavin, Huntington; Kenneth Cohen, Smithtown, and Morton Pullman, East Northport, all of, N.Y., assignors to Instrument Systems Corporation, Huntington, N.Y.

Filed Sept. 5, 1969, Ser. No. 855,527
Int. Cl. H04q *9/00*
U.S. Cl. 340—163 **15 Claims**



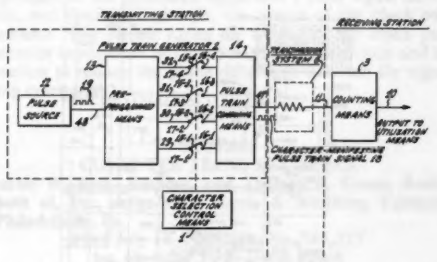
A control system for disposing each of a plurality of utilization circuits in a state responsive to the state of corresponding utilization controls. A plurality of series connected coders detect the state of the utilization controls associated therewith. Decoders associated with each of said coders and in series connection in the same sequence as said corresponding coders control the state of the corresponding utilization circuits. A column timer is in series connection with said coders and decoders for applying control signals thereto. Each of said coders and decoders are sequentially activated to a first active state during which they are operative to perform their assigned functions. Thereafter, each activated coder and decoder assumes an inactive state in which they permit the passage of control signals and data therethrough. Said control signals can be applied in either direction along said series connections.

3,585,596

DIGITAL SIGNALLING SYSTEM

Murray Rosenblatt, Cherry Hill, N.J., assignor to RCA Corporation

Filed Nov. 25, 1968, Ser. No. 778,578
Int. Cl. G08c *19/26, 19/18*
U.S. Cl. 340—168 **4 Claims**

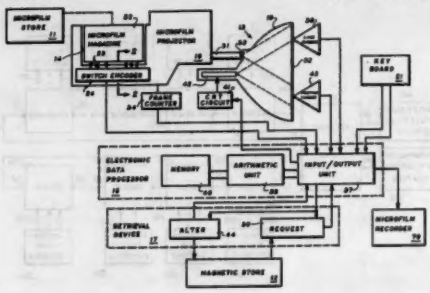


A digital transmission system which is preferably bit synchronized, but is not character synchronized, is achieved by deriving a pulse train having a unique average number of pulses occurring during a certain length time interval, which number corresponds to that particular one of a set of different characters then being transmitted. The total number of pulses received and counted at a receiving station during a time interval equal in length to at least one of the certain length time intervals manifests the character then being received.

3,585,597
INFORMATION STORAGE AND RETRIEVAL SYSTEM

Harold W. Holmerud, Solana Beach, Calif., assignor to Stromberg Datagraphix, Inc., San Diego, Calif.

Filed June 3, 1969, Ser. No. 829,898
Int. Cl. G06f 3/14
U.S. Cl. 340—172.5 5 Claims

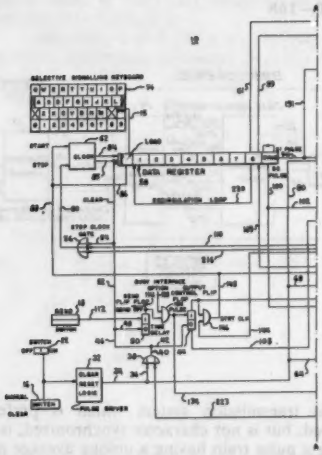


A system is described for storing and retrieving information stored on two types of media, such as microfilm and magnetizable material, the latter being more readily altered to revise and add current information. Means are provided for displaying the two records simultaneously, and selection of one record is sufficient to cause selection of a corresponding record stored on the other type of media through the utilization of addressing means which automatically access the corresponding record on one media upon selection of a record on the other media.

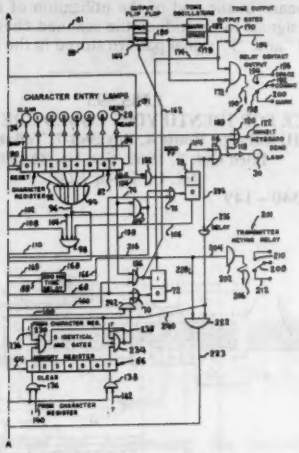
3,585,598
ALPHANUMERIC, VARIABLE WORD LENGTH, CHANNEL SCANNING SELECTIVE SIGNALLING SYSTEM

William Jeffrey Hudson, Jr., Harrisburg; Michael Joseph Yaccino, Mechanicsburg; Edward Camp Dowling, Harrisburg, and Keith Henry Dormer, Harrisburg, all of, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed July 24, 1969, Ser. No. 847,797
Int. Cl. G08b 11/00
U.S. Cl. 340—172.5 14 Claims



A communication system for selective signalling between remote stations is disclosed which features an encoder capable of generating trains of binary bits representative of alphanumeric symbols and converting such bits into mark and space tones or signals for transmission. The encoder includes data register binary memory stages to temporarily store a calling code in serial bit form and logic is provided to permit recirculation of the code for redundant transmission. The encoder stages are coupled and driven to accommodate variable length calling codes with a character register controlled by a memory register to index the data register for such purpose. A receiver-decoder is provided to detect the transmitted mark-space code and convert such into a binary train in proper time relationship. The decoder includes a programmable input to a single eight stage register to generate a local code and Exclusive-OR logic to compare incoming de-

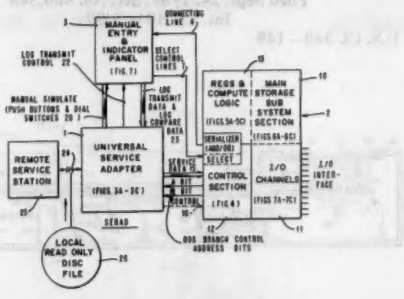


tected code bits with generated code bits and provide a success detect output upon receipt of a proper code. The generation of a local code is used to provide an auto-acknowledge call from the receiver. The receiver includes circuit logic to optimize detection of proper codes and rejection of improper codes or spurious signals. A multichannel scanner is provided in conjunction with the receiver-decoder to automatically search for incoming codes on different channels and logic is provided to perform a number of output command functions responsive to a proper calling code.

3,585,599
UNIVERSAL SYSTEM SERVICE ADAPTER

Donald C. Hitt, Wappingers Falls, N.Y., and Robert J. Woessner, Stewartville, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 9, 1968, Ser. No. 743,567
Int. Cl. G06f 11/00
U.S. Cl. 340—172.5 32 Claims


MANUAL ENTRY & INDICATOR PANEL (FIG. 7)
LOG TRANSMIT CONTROL 23
MANUAL SIMULATE (PUSH BUTTONS & DIAL SWITCHES 26)
LOG TRANSMIT DATA & LOG COMPARE DATA 23
REGS & COMPUTE LOGIC (FIGS. 5A-5C)
MAIN STORAGE & SUB SYSTEM SECTION (FIGS. 6A-6C)
REMOTE SERVICE STATION
UNIVERSAL SERVICE ADAPTER (FIGS. 3A - 3C)
CONTROL SECTION (FIG. 4)
I/O CHANNELS
I/O INTERFACE
SERAD
LOCAL READ ONLY DISC FILE
DOS BRANCH CONTROL ADDRESS BITS

A universal adapter provides a standard interface to external equipment for testing and generally communicating with a data processing system. Linking main control elements of the system with diverse external test equipment, through a bit-serial binary communication terminal, the adapter provides a basis for testing the system while the latter is in a stopped or disabled condition. Responses to tests are sensed

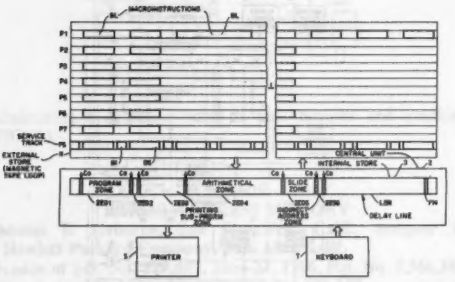
by the adapter through comparisons of selected status signals obtained from the system with predetermined reference signals furnished by the external test equipment. The adapter also cooperates with special monitoring circuits to selectively monitor and transmit to the external equipment signals representing internal system status. These signals are recorded and/or analyzed at the external equipment.

3,585,600

STORED PROGRAM ELECTRONIC COMPUTER

Fabrizio Saltini, Modena, Italy, assignor to Inq. C. Olivetti & C. S.P.A. Ivrea, Torino, Italy

Filed Dec. 16, 1968, Ser. No. 783,894
Claims priority, application Italy, Dec. 14, 1967, 54109-A/67
Int. Cl. G06f *13/00*
U.S. Cl. 340—172.5 **22 Claims**



A computer for executing instructions grouped in fixed length macroinstructions having a bulk memory for storing the macroinstructions and data, and an operational delay line memory divisable into a plurality of zones for storing the macroinstruction presently under execution and data being operated upon. Means are provided for transferring macroinstructions and data between the two memories. The macroinstruction under execution can select one of two macroinstructions from the bulk memory to be next executed depending on whether or not a jump condition has occurred. Each macroinstruction contains a label which specifies how the individual instructions contained therein are to be interpreted. The operational memory may be divided into any zone configuration by a division macroinstruction and any one zone may be designated for a use in a particular operation by recording a heading code before it. The computer also includes a plurality of peripheral units including a printer each of which has its own control unit. Program instructions for controlling a peripheral unit are transferred to the respective control unit and executed directly by it so that the main portion of the computer can overlap the execution of following instructions with the peripheral unit instruction execution. The operational memory also includes a zone for storing a subprogram for controlling the horizontal format of the printers.

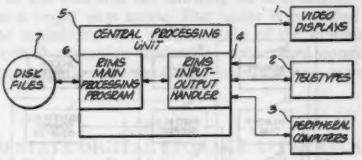
3,585,601

REMOTE INPUT MANAGEMENT SYSTEM

Allan E. Lahrson, Oakland, and Richard C. Zuchowski, San Francisco, both of, Calif., assignors to Kaiser Aluminum & Chemical Corporation

Filed Aug. 19, 1969, Ser. No. 851,242
Int. Cl. G06f *9/18*
U.S. Cl. 340—172.5 **115 Claims**

This invention is a number of digital computer programs and a method of recording and indexing data for use with a centrally located computer and remote terminal equipment. Methods according to this invention enable a user of remote terminals, either teletype, computer or video, to have access



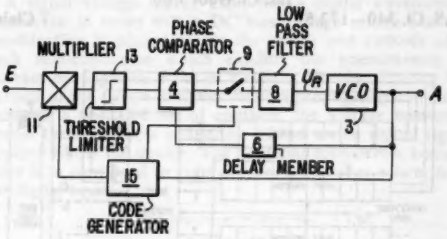
to all computing and data handling functions of a central computer system via a connecting telephone line.

3,585,602

PHASE COMPARING CLOCK PULSE GENERATING CIRCUIT FOR A RECEIVER OF A MULTIPLEX TRANSMISSION SYSTEM

Wolf Herold, Ay(Iller), Germany, assignor to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm Donau, Germany

Filed Oct. 24, 1969, Ser. No. 869,261
Claims priority, application Germany, Oct. 24, 1968, P 18 04 815.9
Int. Cl. H04q *9/14, 11/00*
U.S. Cl. 340—172 **4 Claims**



A clock pulse generating circuit provided at the receiver of a multiplex data transmission system for generating a clock pulse signal for the receiver from the combined signal transmitted over the multiplex system. The circuit is arranged to compare the phase of the output of a local clock pulse generator with the phase of a signal representing the algebraic product of the combined signal and a code signal derived from, and synchronized with, the output of the clock pulse generator. The circuit varies the output of the clock pulse generator in response to the result of the comparison and in a direction to reduce the phase difference between the signals being compared.

3,585,603

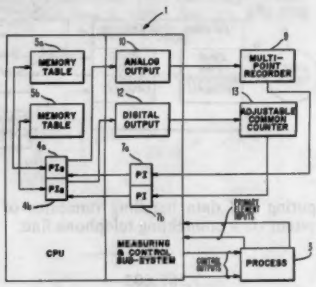
COMPUTER TREND RECORDER

Charles W. Ross, Hatboro, and Thomas A. Green, Roslyn, both of, Pa., assignors to Leeds & Northrup Company, Philadelphia, Pa.

Filed July 16, 1968, Ser. No. 745,217
Int. Cl. G06f *3/12, 15/06, 15/46*
U.S. Cl. 340—172.5 **4 Claims**

A process control system in which a digital computer acts in conjunction with a plurality of external devices is described. Values stored in computer memory and representative of different variables of the process can each be displayed on a multipoint recorder so that an operator has access to a display of any selected variable of the process under control. The multipoint recorder produces an interrupt signal in response to the recording of each point to request the interrupt server in the computer to output the next point to be recorded. The computer also produces a plurality of timed pulse duration signals each of which may be used to control external devices, for example, control valve drive actuators.

These timed pulse duration signals are produced by the computer memory and priority interrupt server acting in cooperation with an external counter to produce the signals with minimum expenditure of computer time.

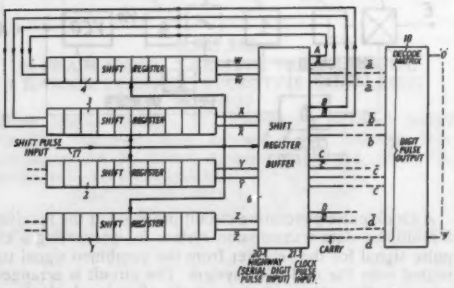


3,585,604

CALCULATING MACHINES

John George Lloyd, Uxbridge, Middlesex, England, assignor to Bell Punch Company Limited, The Island Uxbridge, Middlesex, England

Filed Jan. 17, 1969, Ser. No. 792,064
Claims priority, application Great Britain, Jan. 19, 1968, 3059/68
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5 **7 Claims**



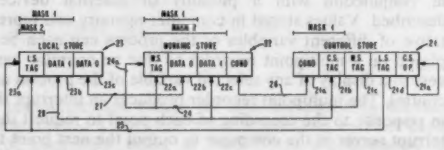
A calculating machine wherein several shift registers store numbers. Each shift register has a buffer stage with gating means. Pulse trains are introduced at the gating means as input pulses for controlling the outputs of the shift registers.

3,585,605

ASSOCIATIVE MEMORY DATA PROCESSOR

Peter A. E. Gardner, Winchester; Michael H. Hallett, Chandlers Ford; Roger J. Llewelyn, Winchester, and Peter J. Titman, Winchester, all of, England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 28, 1969, Ser. No. 828,503
Claims priority, application Great Britain, July 4, 1968, 32075/68
Int. Cl. G11c *15/00*
U.S. Cl. 340—172.5 **15 Claims**



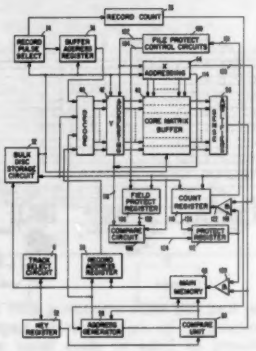
Three associative stores are interconnected to provide a data processor. A control store contains a microprogram and it emits tags that select a function table in a working store and data from a local store, the data being applied to the working store as a look-up argument. The local store may also hold a macroprogram. Two of the stores are interconnected so that a tag emitted by one is used to address the other and vice versa. A nonassociative main store may be connected to the local store.

3,585,606

FILE PROTECT CIRCUIT AND METHOD

James R. Evans, Edicott, and John W. Roossien, Binghamton, both of, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 12, 1969, Ser. No. 857,398
Int. Cl. G06f *1/00*
U.S. Cl. 340—172.5 **8 Claims**



A file protection circuit for disc storage control units prevents unauthorized users from obtaining information from a bulk disc storage unit. Each transfer from the sequentially addressable buffer within the storage control unit is monitored so as to determine whether the data sought from the sequentially addressable buffer is from a protected field. Upon determining that the data is from a protected field, the data transfer from the sequentially addressable buffer to the main memory of the data processor is prevented. The subsequent data transfers are counted by a counting mechanism so as to prevent the transfer of a predetermined number of bytes or characters. When the counting means reaches a predetermined value, the blocking mechanism is inhibited and further transfers from the sequentially addressable buffer to the main memory are allowed.

3,585,607

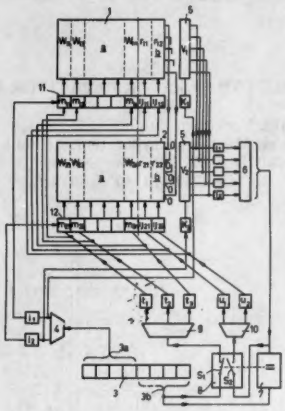
MEMORY WITH REDUNDANCY

Hermanes Johannus Maria De Haan, and Maarten Jan Vliegenthart, both of Emmasingel, Eindhoven, Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.

Filed Feb. 14, 1969, Ser. No. 799,395
Claims priority, application Netherlands, Feb. 19, 1968, 6802366
Int. Cl. G11c *15/00*
U.S. Cl. 340—173 **3 Claims**

Word-organized memory having a plurality of group-organized words and a plurality of redundant words for each group for substituting defective words in that group and being provided with selection members for selecting, inter alia, words groups and the redundant words substituting the defective words and including an indicator address memory which for each word group comprises the address parts of the defective words in the group and at least comprises the address data of the redundant words substituting the defective words of that group due to the location of said address parts in a word of the indicator address memory, and including means by which the address of the indicator address memory

associated with the group upon selection of this group can be selected simultaneously. The selection of a redundant word

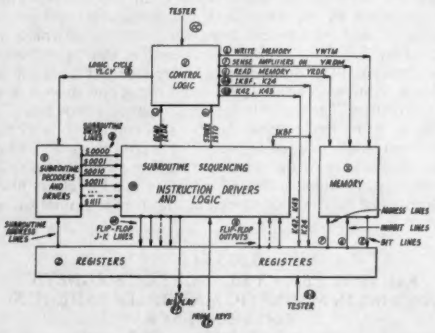


substituting a defective word is thus simpler and quicker. (FIG. 2).

3,585,608
RANDOM ACCESS MEMORY

Thomas E. Osborne, San Francisco, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 599,887, June 23, 1966, Pat. No. 3,566,160
Filed May 21, 1969, Ser. No. 826,359
Int. Cl. G11c *7/00*
U.S. Cl. 340—173 **7 Claims**

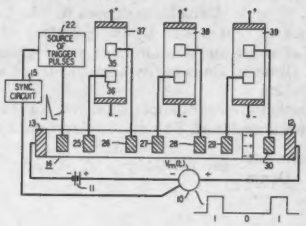


Internal control and subroutine logic transfers data between a keyboard input, a random access memory, and a plurality of flip-flop registers to perform arithmetic operations and transfers the results of these operations to a cathode-ray tube output display. Power switching is employed in the internal control and subroutine logic so that the subroutines and instructions of the calculator are supplied with power only when they are to be executed. When a random access memory cycle is required, it is automatically interposed between the otherwise regularly recurring logic cycles by the internal control and subroutine logic. Encoded transfer vectors are stored and decoded by the subroutine logic to permit unrestricted subroutine returns. In the keyboard input two power supply returns are employed to define one bit of the keyboard encoder. The random access memory is partitioned into one portion addressed by a single bit in an address register and into another, larger portion addressed by the remaining bits in the address register. Each flip-flop of the machine is a J–K flip-flop provided with an adjustable threshold for noise immunity and with a high internal gain on the J–K inputs. In the cathode-ray tube output display, a recurring pattern generated by integration in only two directions is selectively blanked to display the results of the operations performed by the calculator. A tester may be connected to the machine for allowing all subroutines to be operated in a single step mode. The tester is provided with switches for initializing any internal state of the machine or stopping normal execution under any prescribed conditions and with apparatus for accessing the random access memory.

3,585,609
SOLID STATE DIGITAL STORAGE APPARATUS

Richard B. Robrock, II, Matawan Township, Monmouth County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed July 1, 1969, Ser. No. 838,178
Int. Cl. G11c *11/34*
U.S. Cl. 340—173 **2 Claims**

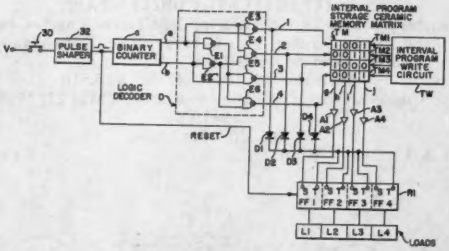


A signal voltage source exhibiting a digital waveform is connected in series with a DC bias voltage source and the combination is placed across the anode and cathode of a bulk semiconductor which exhibits the phenomenon of domain propagation. Pairs of contacts are placed along the surface of the device such that when a propagating domain is between a specified set of contacts, the voltage measured across these contacts is directly related to the digital signal applied across the device. The potential drop across contact pairs is in turn used to control memory devices which store the digital signal.

3,585,610
SOLID STATE MEMORY AND CODING SYSTEM

Peter G. Bartlett, Davenport, Iowa, and Joseph E. Meschi, Lyons, Ill., assignors to Gulf & Western Industries, New York, N.Y.

Continuation-in-part of application Ser. No. 682,814, Nov. 14, 1967. This application July 10, 1968, Ser. No. 748,583
Int. Cl. G11c *11/22*, *13/00*
U.S. Cl. 340—173 **4 Claims**



A load sequence controller is provided which takes the form of a system of solid state memory elements, write circuits, interrogators and decoders to perform the function of a step switch which serves to allocate a plurality of loads selectively. The memory elements serve to receive and store an electrical signal representative of one of two binary states. The interrogator, which includes a logic decoder, serves to apply interrogating signals selectively to the memory elements, thereby providing a pattern of output signals representative of the binary state of the received signal for, in

turn, energizing the selected loads. A circuit is provided for skipping the interrogating function of at least a selected one of the memories. The skipping circuit is interposed between the decoder output circuit and the memories for receiving the interrogation signals and has an output circuit for routing the interrogation signal on a selected one of the decoder output circuits as an input trigger signal to a counter to change the pattern of count signals quickly for skipping the interrogating function of the memory associated with the selected decoder output circuit.

3,585,611

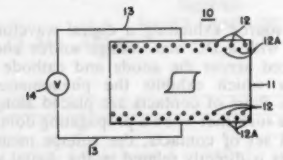
FERROELECTRIC SEMICONDUCTOR MEMORY ELEMENT

Issai Lefkowitz, Princeton Junction, N.J.; Godfrey S. Pawley, Egaa, Denmark; William W. Cochran, Edinburgh, Scotland; Roger A. Cowley, and Gerald Dolling, both of Deep River, Ontario, Canada, assignors to The United States of America as represented by the Secretary of the Army, by said Lefkowitz and Atomic Energy of Canada Limited, Ottawa, Ontario, Canada, by said Cowley, Cochran, Pawley and Dolling

Continuation-in-part of application Ser. No. 749,493, Aug. 1, 1968, now abandoned. This application Dec. 2, 1969, Ser. No. 881,355

Int. Cl. G11c *11/22, 11/36*

U.S. Cl. 340—173 **10 Claims**



A memory element comprising a switchable ferroelectric material which is also a small band gap semiconductor, having sampling bits associated therewith. The surfaces of this material are suitably doped by selective diffusion to produce P–N semiconductor gates on the surfaces. When a question pulse is applied to the semiconducting gates, a current will flow in response to said pulse only when the threshold voltage or coercive field of the ferroelectric is exceeded to thus permit the bit being sampled to reveal the state of polarization of said ferroelectric.

3,585,612

REPETITIVE PLAYBACK MEANS COMPRISING AN INTERMITTENTLY DRIVEN TAPE

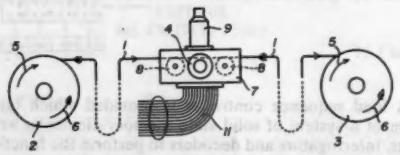
Andre Corbaz, Veyrier/Geneva; Jean-Pierre Engel, Geneva, and Erwin Zurcher, Aire/Geneva, all of, Switzerland, assignors to Edouard Dubied & Cie. S.A.

Filed May 19, 1969, Ser. No. 825,510

Claims priority, application Switzerland, May 21, 1968, 7641/68

Int. Cl. G11c *13/04*

U.S. Cl. 340—173LM **8 Claims**



Repetitive playback means for controlling the operation of a machine, comprising a tape adapted to be driven intermittently to and fro past reading means and having items of information recorded thereon along parallel longitudinally extending tracks, sad items forming two categories, one being read as the tape travels in one direction and the other being read as the tape travels in the other direction, the tape also having recorded thereon near its ends instructions for causing the tape drive to be reversed as the tape reached either end.

3,585,613

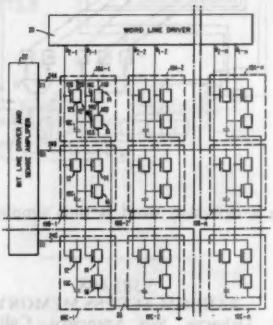
FIELD EFFECT TRANSISTOR CAPACITOR STORAGE CELL

Thomas L. Palfi, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 27, 1969, Ser. No. 853,353

Int. Cl. G11c *11/40, 7/00, 5/02*

U.S. Cl. 340—173 **7 Claims**



A nondestructive read integrated circuit memory having a two-dimensional array of insulated-gate field-effect transistor cells. Each cell consists of three transistors, an input isolation transistor, an output isolation transistor and a storage transistor. The cells in the array are interconnected along one dimension by bit sense lines and along a second dimension by 1 and 2 control lines. Only the cells which are selected by the control lines are operative during a read or write cycle, and the remaining cells are isolated from the active cells by means of the unactivated input and output isolation transistors. The input isolation transistor, when activated during a write cycle controls the placement of a charge which represents storage information across the gate to substrate capacitance of the storage transistor. The output isolation transistor, when activated during a read cycle controls the sensing of information stored at the storage transistor.

3,585,614

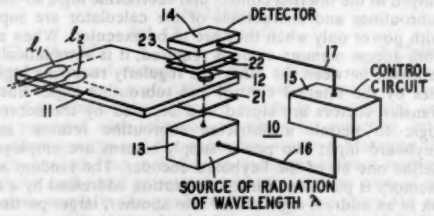
FARADAY EFFECT READOUT OF MAGNETIC DOMAINS IN MAGNETIC MATERIALS EXHIBITING BIREFRINGENCE

William J. Tabor, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkely Heights, N.J.

Filed May 23, 1969, Ser. No. 827,389

Int. Cl. G11c *11/14;* **G02f** *1/22, 1/24*

U.S. Cl. 340—174 **10 Claims**



A plurality of layers of magnetic birefringent material exhibiting Faraday rotation changes the periodic effect of

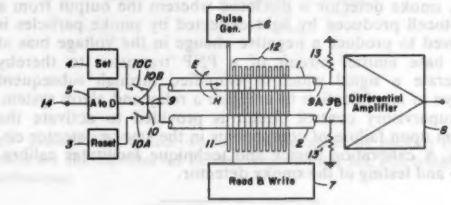
birefringence on that rotation, characteristic of a single layer of such material, into a continual enhancement of Faraday rotation if each of those layers is less than a critical thickness and if adjacent layers are oriented at about 90° with respect to one another. Optical readout of single wall domain propagation devices is improved by arranging at least a readout position accordingly.

3,585,615

ANALOG MEMORY APPARATUS

Kousuke Takahasni, and Hiroshi Murakami, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed June 25, 1969, Ser. No. 836,461
Claims priority, application Japan, June 29, 1968, 43/45468
Int. Cl. G11c *11/04, 11/14*
U.S. Cl. 340—174 **17 Claims**



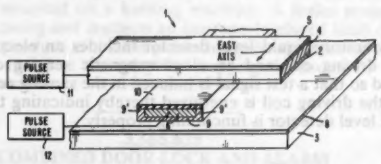
Analog memory apparatus is provided in accordance with the teachings of the present invention wherein a thin film memory having row and column windings is adapted to have established therein, in response to a setting field, a magnetic domain whose axis of magnetization is opposite to the direction of magnetization of other domains therein. Once established, such reversely directed domain may be expanded under the influence of write-in pulses applied in the column direction in combination with pulses having a short repetitive period applied in the row direction in a timed relationship therewith. Readout pulses may be applied in the same direction as said write-in pulses whereupon nondestructive readout may be obtained in the column direction and signals are accordingly read out which correspond to the relative magnitude of the expanded, reversely directed domain.

3,585,616

INFORMATION STORAGE ELEMENT

Nicholas J. Mazzeo, Mahopac, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 24, 1968, Ser. No. 788,992
Int. Cl. G11c *11/14*
U.S. Cl. 340—174TF **17 Claims**



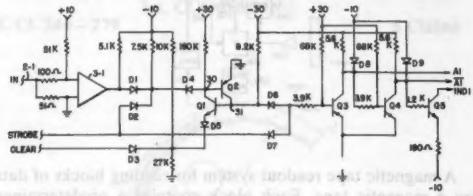
A coupled film magnetic memory element is disclosed which incorporates a field applying element which is disposed between a substrate and the lower of two orthogonally disposed conductors. In a preferred embodiment, a pair of closed easy axis (CEA) magnetic films are disposed about a bit conductor. These elements are disposed orthogonally relative to a word conductor and a field applying magnetic material which is disposed in underlying and coextensive relationships with the word line. A conductive substrate is disposed adjacent the field applying film and supports all the above described elements. In arrangements having fast pulse rise times, a pulse applied to the word line produces a high field in the field applying film such that for a given amount flux to be made available for switching a storage film, a substantially smaller word current is required. In addition, because the bit line is spaced further from the substrate, it presents a high impedance and consequently provides a higher sense voltage at the input of a sense amplifier.

3,585,617

READOUT REGISTER

Walter Banziger, Utica, and Donald C. Smith, Mohawk, both of, N.Y., assignors to Mohawk Data Sciences Corporation, Herkimer, N.Y.

Filed Feb. 7, 1969, Ser. No. 797,472
Int. Cl. G11c *7/02, 5/02, 11/06*
U.S. Cl. 340—174 **4 Claims**



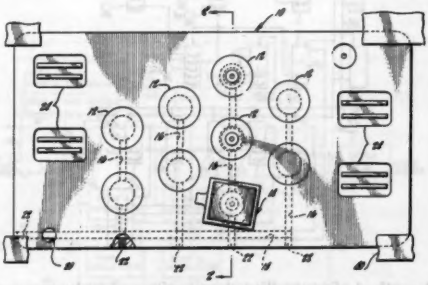
Data is read out of magnetic cores and stored in a readout register having a plurality of bit storage stages, each stage including a two-transistor latch circuit and a plurality of output transistors connected to the output of the latch. A strobe pulse applies the core data to the latch circuit and at the same time isolates the output transistors from the latch to prevent the switching of the former during the strobe period.

3,585,618

MULTIPLE RECORDING HEADS USING COMMON POSITION CONTROL MANIFOLD IN DISK FILE MEMORY

Alpheus F. Stansell, West Covina, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Apr. 7, 1967, Ser. No. 629,140
Int. Cl. G11b *5/48, 5/54, 5/60*
U.S. Cl. 340—174.1 **13 Claims**



A manifold for use in positioning magnetic transducers adjacent a rotating disc coated with a magnetic material. A pressure source communicates with two or more transducers through the manifold to advance the transducers toward the

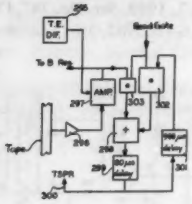
disc surface to provide proper spacing between the transducers and the surface. Separation between the disc and transducers is maintained by an air bearing created at the surface of the rotating disc.

3,585,619

MAGNETIC TAPE READOUT SYSTEM WITH MEANS TO GENERATE ARTIFICIAL SIGNALS

George R. Cogar, Frankfort; Torkjell Sekse, Marcy; Walter Banziger, Utica; Joseph W. Ming, Utica, and Laszlo Horvath, Ilion, all of, N.Y., assignors to Mohawk Data Sciences Corporation, Herkimer, N.Y.

Division of Ser. No. 541,450, Mar. 30, 1966, Pat. No. 3,483,523
Filed Jan. 14, 1969, Ser. No. 792,900
Int. Cl. G11b *5/02, 5/44*
U.S. Cl. 340—174.1 **9 Claims**



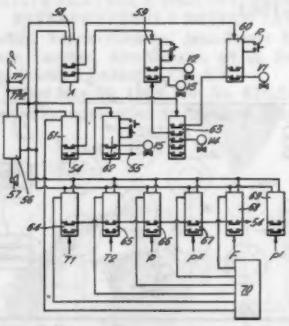
A magnetic tape readout system for reading blocks of data on a magnetic tape. Each block contains a predetermined number of characters and is read during an individual read cycle. The characters are counted as they are read to determine the end of each cycle and, where no data is sensed, a series of artificial data signals are generated and counted in place of the missing characters. These artificial pulses allow the read cycle to be terminated in this situation before the next successive data block arrives at the read station.

3,585,620

SIGNALLING AND CONTROL SYSTEM

Michel Durand, Isere; Jacques Pages, Rhone, and Constantine Trofimoff, Isere, France, assignors to Rhone-Poulenc S.A., Paris, France

Filed Apr. 15, 1968, Ser. No. 721,480
Claims priority, application France, Apr. 19, 1967, 103,371
Int. Cl. G08b *19/00*
U.S. Cl. 340—222 **10 Claims**



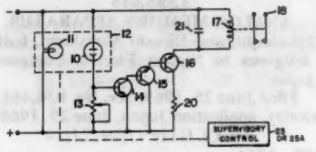
A method of controlling the signalling of faults in a system to be supervised and of controlling a followup action which includes the use of units chosen from a group of which a first type performs common signal control functions, a second type performs the functions of signal control which are peculiar to a fault, a third type performs a followup control and a fourth type provides signal repetition.

3,585,621

SMOKE DETECTOR

Louis J. DiCello, deceased, late of San Mateo, Calif., and Mrs. Louis J. DiCello, Legal Representative, 3805 Kenwood Ave., San Mateo, Calif.

Filed Feb. 13, 1968, Ser. No. 705,887
Int. Cl. G08b *21/00*
U.S. Cl. 340—237S **2 Claims**



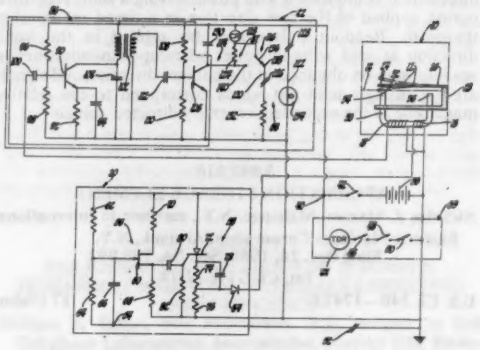
A smoke detector is disclosed wherein the output from a photocell produced by light deflected by smoke particles is utilized to produce a negative change in the voltage bias at the base emitter circuit of a PNP transistor to thereby generate a signal which is amplified through subsequent stages of amplification to energize a relay and alarm system. A supervisory control circuit is provided to activate the alarm upon failure of components in the smoke detector circuit. A calibration device and technique facilitates calibration and testing of the smoke detector.

3,585,622

VIBRATORY LIQUID LEVEL DETECTOR

Clark E. Quinn, Rochester, and Joseph Felice, East Detroit, both of, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 4, 1968, Ser. No. 757,266
Int. Cl. G08b *21/00*
U.S. Cl. 340—244 **7 Claims**



A vibratory liquid level detector includes an electromagnetic driving coil and an electromagnetic sensing coil arranged so that a test signal is induced in the sensing coil each time the driving coil is energized thereby indicating that the liquid level detector is functioning properly.

3,585,623

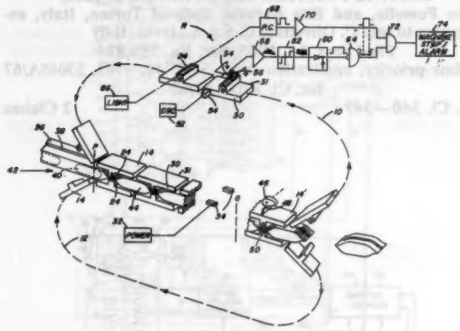
OPEN CIRCUIT DETECTOR FOR HEATING ELEMENT

Joseph F. Laukaitis, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 2, 1969, Ser. No. 863,068
Int. Cl. G08b *21/00*
U.S. Cl. 340—256 **8 Claims**

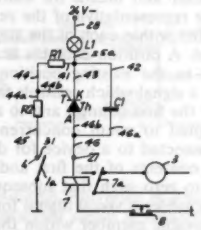
The electrical continuities of a pair of parallel heater wires—which form part of a conveyor element in a packaging machine, and which heater wires, in combination or singularly, provide an impedance within the same range that obtains between such wires and contact brushes—are checked

as follows: An alternating current is passed through the heater wires; and a magnetic pickup is adapted to scan the



field around the heater wires. The duration of pickup depends on the number of heater wires which are electrically continuous.

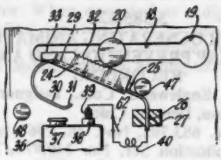
3,585,624
FEELER-CONTROLLED STOP MOTION DEVICE
Gernot Gottschall, Boeblingen, Germany, assignor to Morat Franz GmbH, Stuttgart-Vaihingen, Germany
Filed Nov. 18, 1969, Ser. No. 877,628
Claims priority, application Germany, Nov. 20, 1968, G 68 07 789.4
Int. Cl. H01h *3/16*
U.S. Cl. 340—267 **9 Claims**



A thyristor circuit is assembled in a small tubular casing which is mounted on a knitting machine. A feeler projects from the casing and contacts an improperly placed latch of a needle to produce a current pulse firing the thyristor so that the same energizes the relay for stopping the motor of the knitting machine.

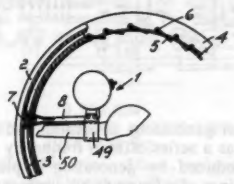
3,585,625
COMBINED DOOR LOCK AND ALARM
Jerome L. Prinsky, Wynnewood, Pa., and Alan John Perfect, Willingboro, N.J., assignors to Wessel Hardware Corporation, Philadelphia, Pa.
Filed June 8, 1970, Ser. No. 44,157
Int. Cl. G08b *13/08*
U.S. Cl. 340—274 **19 Claims**

The invention contemplates an audible or other alarm feature integrated into a door-closure safety device such as a chain-bolt mechanism, wherein the bolt is selectively enterable into a slot in order that the chain may limit door movement, should conventional latch or lock mechanism be inoperative or inadequate. The alarm feature is so arranged as to operate before a would-be intruder has moved the door to the point of chain retention. Also, the alarm feature is



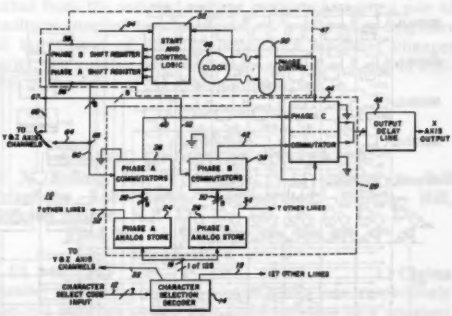
retained in alarm condition, until reset only from the incise, i.e., from the protected region.

3,585,626
SAFETY ALARM DEVICE FOR DRIVERS
Cesare Tartarini, Via Colombo, 9, Zola Predosa, Italy
Filed June 10, 1968, Ser. No. 735,792
Claims priority, application Great Britain, June 13, 1967, 1689/67
Int. Cl. G08b *21/00*
U.S. Cl. 340—279 **5 Claims**



This disclosure relates to a safety alarm device for warning a vehicle driver against states of drowsiness, which comprises a tubular sensing member arranged along the rim of a vehicle steering wheel, said sensing member being arranged to determine, according to the pressure with which it is actuated, a delay for a delay device, which, if it is not recharged before the end of such delay, actuates an acoustic alarm device, said sensing member being arranged to act on said delay device in substantially only dynamic manner.

3,585,627
CHARACTER GENERATOR
Daryl J. Christopher, Framingham, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Sept. 1, 1967, Ser. No. 664,987
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 **8 Claims**



A high-speed character generator which employs single resistors for storing character stroke information and which

employs alternating low-speed current mode commutators to alternately drive a two-phase, high-speed current mode commutator.

3,585,628

COMPUTER FOR GENERATING ANIMATED IMAGES WITH OVERLAP PREVENTION AND ANIMATION RECORDING

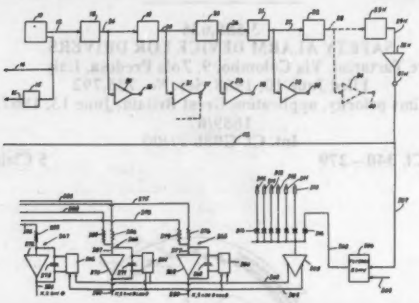
Lee Harrison, III, Englewood, Colo., assignor to Computer Image Corporation, Denver, Colo.

Division of Ser. No. 683,702, Nov. 16, 1967, which is a continuation of application Ser. No. 240,970, Nov. 29, 1962, now abandoned

Filed June 18, 1969, Ser. No. 834,400

Int. Cl. G06f *3/14*

U.S. Cl. 340—324.1 19 Claims



A system for generating, animating and displaying one or more figures as a series of high frequency displays. The displays are produced by generating a plurality of vectors representing lines of a figure to be displayed. The vectors are located on the display by positioning voltages which uniquely determine the placement of each of the segments of the figure. The system further includes means to generate background information and to prevent the overlapping of foreground and background information. A coordinate transformation network provides resolution of the three-dimensional generated image into a two-dimensional display. Means are also provided for modulating the intensity of selected parts of the displayed image in accordance with shading requirements.

3,585,629

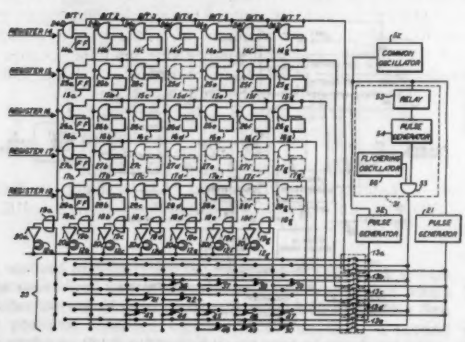
DISPLAY UTILIZING DIMMED OR FLICKERING LAMPS TO INDICATE DIFFERENT DATA SETS

Joseph S. Baynard, Jr., Burlington, N.C., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Nov. 5, 1969, Ser. No. 874,186

Int. Cl. G08b *5/38*

U.S. Cl. 340—324R 5 Claims



Different data sets displayed in a lamp array are distinguished by dimming or blinking the lamps associated with the different data sets. Pulse generators having different duty cycles and different frequencies of operation are used to illuminate the dimmed or flickering lamps.

3,585,630

DIGITAL POSITION MEASURING DEVICES

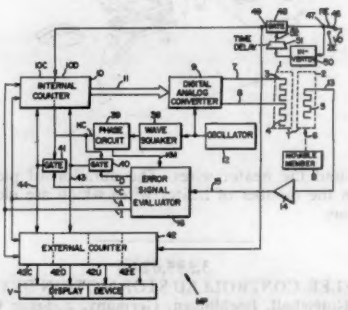
Piero Pomella, and Elia Baratto, both of Torino, Italy, assignors to Inq. C. Olivetti & C. S.p.A., Ivrea, Italy

Filed Sept. 16, 1968, Ser. No. 759,895

Claims priority, application Italy, Sept. 16, 1967, 53045A/67

Int. Cl. H03k *13/02*

U.S. Cl. 340—347 2 Claims



A digital position measuring device for measuring the displacement of a member movable with respect to a fixed member along an axis provided with a series of zero positions successively and equally displaced from one another to form steps. A first counter and means for converting its digital contents which are representative of the relative position of the movable member within each of the steps into an analog signal are provided. A position detector is responsive to the analog signal and to the existing position of the movable member to supply a signal which controls the transmission of counting pulses to the first counter and to a second counter. The latter is adapted to count concurrently with the first counter and is connected to a device for displaying its contents. The digital contents of the first and second counters are initially reset to zero such that subsequent operation of the two counters enables a visual digital form of the relative position of the movable member within the limits of one of said steps to be produced by the display device.

3,585,631

SQUARE LAW ANALOG-TO-DIGITAL CONVERTER

Ranier F. McCown, Woodbridge, Va., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

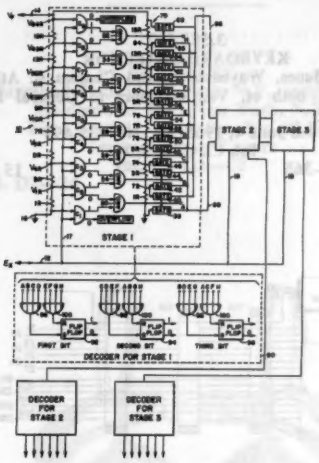
Filed Nov. 26, 1969, Ser. No. 880,142

Int. Cl. H03k *13/175*

U.S. Cl. 340—347 6 Claims

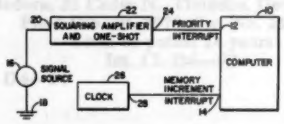
A plural stage analog-to-digital converter with a square law transfer characteristic is described. The converter comprises in a typical embodiment three identical stages with the first stage having a fixed reference voltage applied thereto. More or less stages can be used as desired. A pair of identical resistive ladder networks having the resistors thereof arranged in quadratic fashion is employed in each of the stages of the converter. The ladder networks of the first stage divide the fixed reference voltage applied to the first stage into a plurality of voltages each of predetermined magnitude. A plurality of comparators is employed in each stage to compare a divided reference voltage applied to the respective stages with an unknown analog input signal which is also applied to each stage. The reference voltages for the second stage are obtained from the first stage and the reference voltages for

the third stage are obtained from the second stage. A decoder is coupled to each stage of the converter for deriving



an output representative of the square of the level of the analog signal applied to the converter.

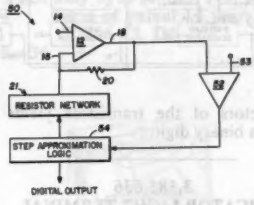
3,585,632
CONTROL APPARATUS
Frederick F. Beck, Glendora, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed Dec. 4, 1967, Ser. No. 687,809
Int. Cl. H03k *13/02*
U.S. Cl. 340—347AD **2 Claims**



A frequency-to-digital converter is disclosed wherein the frequency of an external signal is digitized by coupling the signal to a priority or program interrupt or signalling channel of a digital computer and connecting internal or external clock pulses to a memory increment or program interrupt channel. The computer is programmed to calculate the number of clock pulses between successive rises of the input signal. Thus, the number of clock pulses is a measure of the period of the input signal which is the reciprocal of the instantaneous frequency.

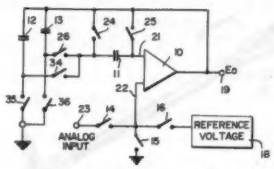
3,585,633
D-A OR A-D CONVERTER
Robert E. Young, Harris, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Sept. 9, 1968, Ser. No. 758,537
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 **1 Claim**

A reference voltage is applied to the noninverting input of a differential amplifier. The output of the amplifier is connected through a feedback resistor to the inverting input so that the output voltage increases as required to maintain the inverting input at the same potential as the reference voltage. A plurality of resistance branches connect the inverting input to ground. Current through the feedback resistor can be increased incrementally by switching selected resistance branches conductive, thus requiring an increased output voltage in order to maintain the inverting input at the reference voltage. Current through each resistance branch is controlled by a transistor operated in the inverted mode so that the IR drop through the transistor tends to cancel the offset voltage of the transistor. When operated as a digital-to-analog converter, the digital input is used to control the resistance branches and the output of the amplifier produces the analog signal. A step approximation analog-to-digital converter is



also described in which the output of the differential amplifier is applied to one input of a comparator and an analog signal applied to one input of a comparator and an analog signal applied to the other input. The resistor branch network is operated by a step approximation logic circuit in a manner to maintain the system balanced. The state of the resistor branch network is representative of the digital output. The reference voltage and analog input voltage may also be reversed.

3,585,634
CYCLICALLY OPERATING ANALOG TO DIGITAL CONVERTER
Kenneth R. Sharples, Braintree, Mass., assignor to Tyco Instrument Division, Inc., Waltham, Mass.
Filed June 31, 1968, Ser. No. 749,006
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 **16 Claims**

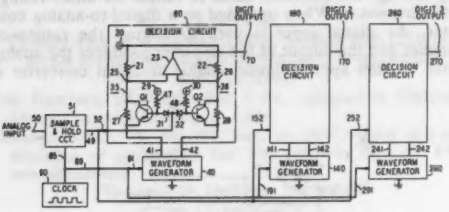


An analog to digital converter in which an analog input signal is sampled and a reference voltage is repetitively substracted from the sampled voltage by interchanging a pair of capacitors coupled to the output of a high-gain amplifier until the output of the high-impedance amplifier changes polarity, the number of interchanges serving as a digital indication of the value of the analog input signal.

3,585,635
ANALOG-TO-DIGITAL CONVERTER
Paul A. Reiling, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Dec. 23, 1968, Ser. No. 786,250
Int. Cl. H03k *13/175*
U.S. Cl. 340—347 **12 Claims**

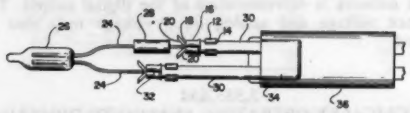
Parallel transistor-resistor combinations are respectively connected into two conduction paths supplied by a constant current source, and a sampled analog input signal is applied in common to the base terminals of the transistors. Voltage pairs defining predetermined voltage intervals are applied to the respective emitters of the transistors such that one of the

transistors is turned ON if the input signal is within one of the predetermined voltage intervals. A difference circuit bridged



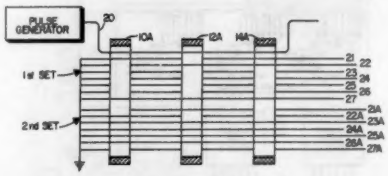
across the collectors of the transistors yields an output representative of a binary digit.

3,585,636
INDICATOR LIGHT TERMINAL
Frederick J. Ryan, Franklin, Mass., assignor to United-Carr Incorporated, Boston, Mass.
Filed Nov. 30, 1967, Ser. No. 686,890
Int. Cl. G08b *5/00*
U.S. Cl. 340—381 **1 Claim**



This invention is directed at an indicator terminal having tangs with sharp points adapted to engage against the wall of the indicator housing and adapted to form their own engagement tracks as well as prevent loosening of the terminal from the housing once the terminal is fully engaged.

3,585,637
KEYBOARD DETECTOR
Clifford M. Jones, Waynesboro, and Charles E. Atkinson, Alexandria, both of, Va., assignors to General Electric Company
Filed June 4, 1968, Ser. No. 735,499
Int. Cl. G08c *9/04*
U.S. Cl. 340—365 **15 Claims**



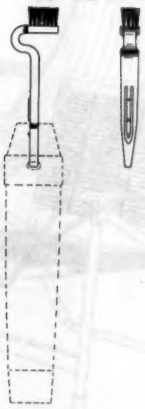
Individual magnetic cores are associated with keys on a keyboard, and two sets of electrical conductors are threaded through the cores in opposite senses to provide code and inverse code signals. Circuit means is provided to detect a change in logic levels caused by simultaneous depression of two or more keys and to produce a data strobe output only when a single key is depressed.

DESIGNS

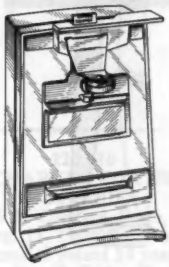
JUNE 15, 1971

220,897
BRASSIERE
Raymond Pioli, Floral Park, N.Y., assignor to Maidenform, Inc., New York, N.Y.
Filed Sept. 12, 1969, Ser. No. 19,133
Term of patent 7 years
Int. Cl. D2—*02*
U.S. Cl. D2—24

220,898
ELECTRIC SPOTTING BRUSH FOR DRYCLEANERS
John Jedora, 33 Cedar N., Timmins, Ontario, Canada
Filed Feb. 20, 1970, Ser. No. 21,539
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—14



220,899
ELECTRIC CAN OPENER
Robert O. Ernest, Oak Park, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed July 9, 1970, Ser. No. 23,882
Term of patent 14 years
Int. Cl. D8—*02*
U.S. Cl. D8—36

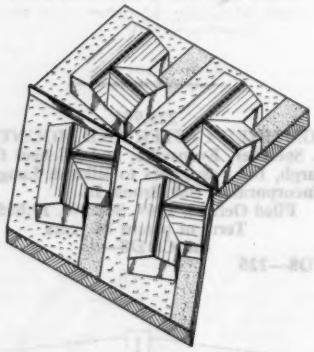


220,900
FIREMAN'S TOOL
Theodore Ziaylek, Jr., P.O. Box 292, Yardley, Pa. 19068
Filed Mar. 9, 1970, Ser. No. 21,828
Term of patent 14 years
Int. Cl. D8—*02*
U.S. Cl. D8—89

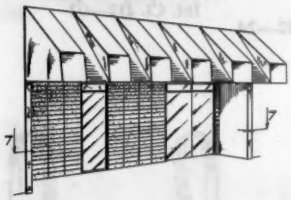
220,901
COMBINED CASTER AND MOUNTING
Alan W. Speicher, Evansville, and Michael G. Forman, Newburgh, Ind., assignors to Bliss & Laughlin Industries, Incorporated, Oak Brook, Ill.
Filed Oct. 23, 1969, Ser. No. 19,685
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—226

220,902
BOTTLE OR SIMILAR ARTICLE
Jack H. Rosfeld and James C. McKinney, Greenville County, S.C., assignors to Texize Chemicals, Inc.
Filed Apr. 8, 1970, Ser. No. 22,317
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—42

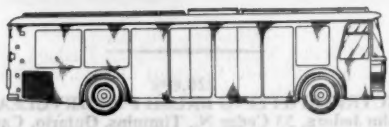
220,903
HOUSING TRACT
Fred C. Sproul, Sr., P.O. Box 1038, Oceanside, Calif. 92054
Filed May 9, 1969, Ser. No. 17,102
Term of patent 14 years
The portion of the term of the patent subsequent to Aug. 15, 1982, has been disclaimed
Int. Cl. D25—*04*
U.S. Cl. D13—1



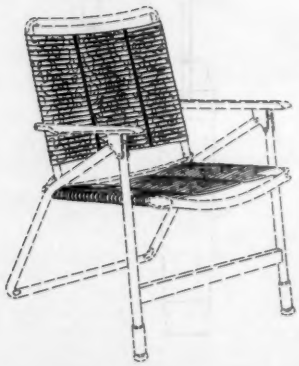
220,904
STORE FRONT
Stanley A. Jacobs and Marjorie L. Jacobs, New Haven, Conn., assignors to The Thin Man, Inc., New Haven, Conn.
Filed Nov. 12, 1969, Ser. No. 20,043
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—1



220,905
PHOTOGRAPHIC BUS
Fouad Said, Los Angeles, Calif., assignor to Fouad Said Productions Inc., Los Angeles, Calif.
Filed Nov. 17, 1969, Ser. No. 20,118
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D14—3



220,906
CHAIR OR SIMILAR ARTICLE
Donald J. Borichevsky, Wells, Va., assignor to The Telescope Folding Furniture Co., Inc., Granville, N.Y.
Filed Apr. 16, 1969, Ser. No. 16,815
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D15—1



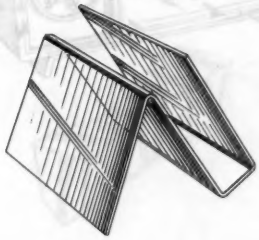
220,907
COMBINED CHAIR AND ATTACHMENT TRAY FOR USE IN SURGICAL TREATMENT
Malcolm Kerwit, Fair Lawn, N.J., assignor to Kerwit Medical Products, Inc., Fair Lawn, N.J.
Filed Sept. 29, 1969, Ser. No. 19,329
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D15—3

220,908
FOLDING CHAIR
Alexander Ralph Smith, East Molesey, England, assignor to Unique Mail Order Company Limited, East Molesey, Surrey, England
Filed Nov. 28, 1969, Ser. No. 20,299
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D15—11

220,909
COMBINATION FISHING ROD SUPPORT AND BITE ALARM
George H. Jennings, 4821 N. La Sena, Baldwin Park, Calif. 91706
Filed June 1, 1970, Ser. No. 23,230
Term of patent 14 years
Int. Cl. D22—*08*
U.S. Cl. D22—22

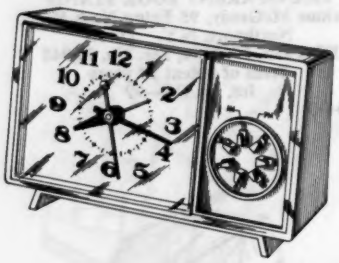
220,910
PORTABLE CHARGER FOR HEARING AID BATTERIES
Lee Poirier, 619 N. Orchard, Boise, Idaho 83704
Filed Aug. 11, 1969, Ser. No. 18,639
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D26—15

220,911
TRANSPARENT BOOK STAND
Corinne McGrady, 95 Eaton Neck Road, Northport, N.Y. 11768
Filed Jan. 15, 1970, Ser. No. 20,945
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. 33—3

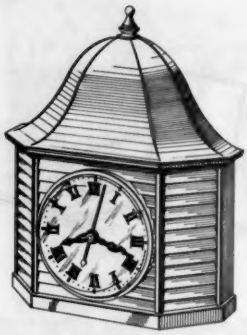


220,912
ICE HOCKEY ROLLER SKATE
Raymond V. Sessa, 11 Glen Cove, Chesterfield, Mo. 63017
Filed Mar. 23, 1970, Ser. No. 22,006
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—14

220,913
CLOCK OR SIMILAR ARTICLE
William V. Judson, Westport, Conn., assignor to General Electric Company
Filed Oct. 29, 1969, Ser. No. 19,835
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7

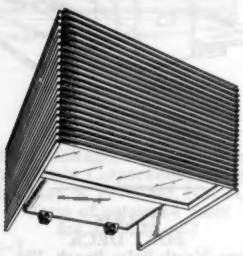


220,914
CLOCK OR SIMILAR ARTICLE
William V. Judson, Westport, Conn., assignor to General Electric Company
Filed Mar. 3, 1970, Ser. No. 21,720
Term of patent 3½ years
Int. Cl. D10—*01*
U.S. Cl. D42—7



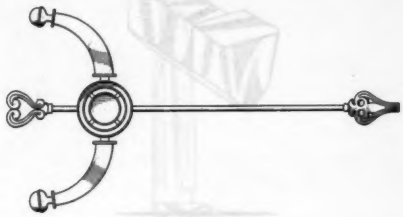
220,915
DOUGH KNEADER
Edward M. Schelosky, R.R. 5, Box 434, Vanderburgh County, Ind. 47711
Filed May 7, 1970, Ser. No. 22,875
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D44—1

220,916
WALL-MOUNTED LIGHT FIXTURE
Albert C. McNamara, Jr., Houston, Tex., assignor to Esquire, Inc., New York, N.Y.
Continuation-in-part of design application Ser. No. 16,667, Apr. 10, 1969, now Patent No. 216,830. This application Sept. 8, 1969, Ser. No. 19,055
Term of patent 14 years
The portion of the term of the patent subsequent to Mar. 10, 1984, has been disclaimed
Int. Cl. D26—*02*
U.S. Cl. D48—4

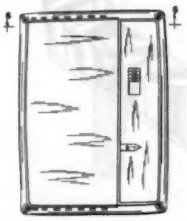


220,917
RAZOR-BLADE SCRAPER
Thomas F. Howerter, Fort Collins, Colo., assignor to Carol Company, Fort Collins, Colo.
Filed Aug. 25, 1969, Ser. No. 18,883
Term of patent 14 years
Int. Cl. D7—*06, 99*
U.S. Cl. D49—26

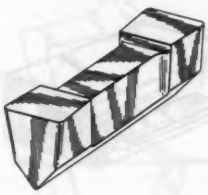
220,918
DIVINING ROD
Reuben B. Klamer, 245 S. Barrington, Los Angeles, Calif. 90049, and Richard F. Conroy, Arcadia, and Ronald F. Chesley, La Crescenta, Calif.; said Conroy and Chesley assignors to said Klamer
Filed Feb. 20, 1970, Ser. No. 21,534
Term of patent 14 years
Int. Cl. D31
U.S. Cl. D52—1



220,919
WALL THERMOSTAT
Frederick M. Hill, Columbus, Ohio, assignor to Ramco Incorporated, Columbus, Ohio
Filed Apr. 13, 1970, Ser. No. 22,397
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D52—7

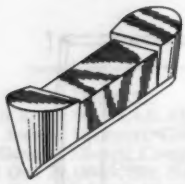


220,920
DOUBLE ENDED CUTTING INSERT
Burton L. Cochran, North Canton, Ohio, assignor to The Warner & Swazey Company, Cleveland, Ohio
Filed Feb. 18, 1970, Ser. No. 21,483
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D54—6

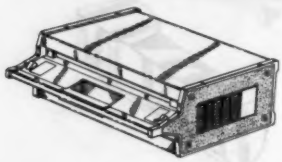


220,921
SINGLE ENDED CUTTING INSERT
Burton L. Cochran, North Canton, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio
Filed Feb. 18, 1970, Ser. No. 21,491
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D54—6

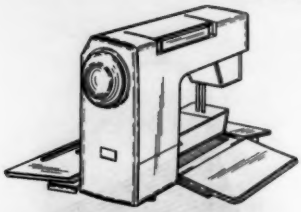
220,922
DOUBLE ENDED CUTTING INSERT WITH POSITIVE RAKE
Burton L. Cochran, North Canton, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio
Filed Apr. 3, 1970, Ser. No. 22,235
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D54—6



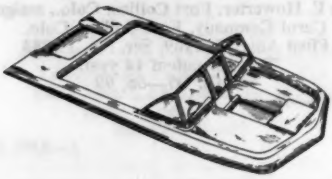
220,923
COPY-MACHINE
Jack P. Blomgren, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Mar. 2, 1970, Ser. No. 21,696
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1



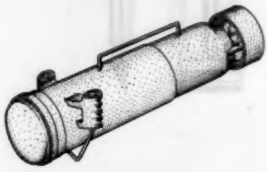
220,924
SEWING MACHINE
Marcel Fresard, Petit-Lancy, Switzerland, assignor to Mefina S.A., Fribourg, Switzerland
Filed Feb. 25, 1970, Ser. No. 21,624
Claims priority, application Switzerland Sept. 1, 1969
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D70—1



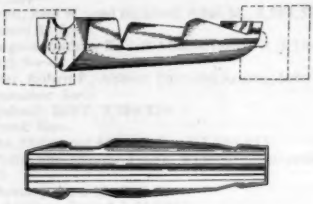
220,925
BOAT DECK
Harry Boomer, North Palm Beach, Fla., assignor to Gemini Marine, Inc., Stuart, Fla.
Filed Feb. 3, 1970, Ser. No. 21,236
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D71—1



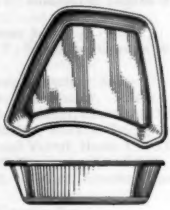
220,926
UNDERWATER TOWING VEHICLE
George J. Peroni, Miami, Fla., assignor to Seatech Corporation, Miami, Fla.
Filed July 13, 1970, Ser. No. 23,930
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D71—1



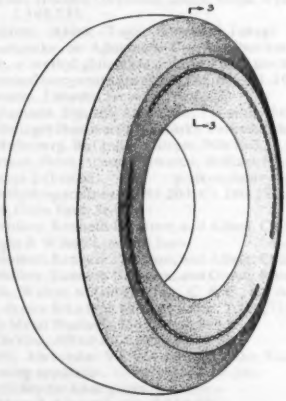
220,927
CRADLE FOR POSITIONING PATIENT FOR RADIOLOGICAL DIAGNOSIS OR THERAPY
Wesley A. Mowrer, Northfield, Ohio, assignor to Bandel, Inc., Cleveland, Ohio
Filed Feb. 27, 1970, Ser. No. 21,661
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1



220,928
MEDICAL BASIN
Lewis F. Bost, Chicago, Ill., assignor to American Hospital Supply Corporation, Evanston, Ill.
Filed Mar. 6, 1970, Ser. No. 21,765
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1

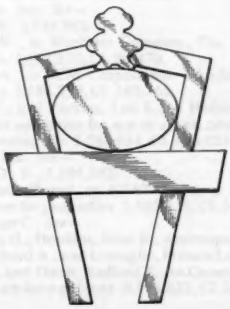


220,929
PNEUMATIC TIRE
Donald Przewodek, Warren, Stanley E. Thorwaldsen, Grosse Pointe Farms, and Dale J. Beaudoin, Detroit, Mich., assignors to Uniroyal, Inc., New York, N.Y.
Filed July 23, 1969, Ser. No. 18,356
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—20



220,930
KNIFE
John Arlett, London, England, assignor to Wilkinson Sword Limited, London, England
Continuation of abandoned design applications Ser. No. 19,728, and Ser. No. 19,732, both Oct. 27, 1969. This application May 7, 1970, Ser. No. 22,871
Claims priority, application Great Britain May 6, 1969
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D95—3

220,931
ADVERTISING SIGN
Frank P. Thomas, 4000 N. Meridian, Indianapolis, Ind. 46208
Filed Aug. 21, 1969, Ser. No. 18,783
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—12



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 15TH DAY OF JUNE, 1971

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Huntington, Andrew B.; and Abbott, Daniel B.,3,584,652.

Abbott, Earl: *See—*
Lickliter, Robert P.; Abbott, Earl; and Reeves, John F.,3,584,904.

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Abrami, Frank: *See—*
Abrami, Philip; and Abrami, Frank,3,584,413.

Abrami, Philip; and Abrami, Frank. Window construction. 3,584,413, Cl. 49-65.

Abrasive Developments Limited: *See—*
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ACF Industries, Incorporated: *See—*
Rollins, Dallas, W., 3,584,564.

Ackermann, Jacob; and Croce, Roberto, to Societa' Italina Resine S.p.A. Process for stabilizing aqueous formaldehyde solutions. 3,585,240, Cl. 260-606.

Acme Highway Products Corporation: *See—*
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Adamovske strojirny, narodni podnik: *See—*
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Aerojet-General Corporation: *See—*
Cannon, Charles R.; and Cantor, Paul A., 3,585,126.
Ditter, Jerome F.; Klusmann, Eugene B.; and Williams, Robert E., 3,585,241.

Aeroquip Corporation: *See—*
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Bockly, Erich; Danhauser, Justus; Heilmann, Max; Gotze, Johannes; and Gunther, Eberhard, 3,585,032.
Kabitzke, Karlheinz; Bockly, Erich; Danhauser, Justus; Freytag, Karl-Heinz; and Vetter, Hans, 3,585,039.
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Pelz, Willibald; Gunther, Eberhard; and Meissner, Hans-Dieter, 3,585,030.

Ahearn, Mortimer George: *See—*
Hoef, William A.; and Ahearn, Mortimer George,3,584,629.

Aigner, Franz: *See—*
Wehrmann, Felix; and Aigner, Franz,3,585,120.

Aiki, Shigeo; Kobashi, Uichiro; and Hayashi, Masaharu, to Aisin Seiki Company. Flexible blade fan. 3,584,969, Cl. 416-132.

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Ajinomoto Co., Inc.: *See—*
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Akamatsu, Akira; Togo, Kazushi; Takagi, Yasuo; and Yoshida, Ryonosuke, to Ajinomoto Co., Inc.Process for preparing films of poly-α-methyl glutamate modified with urethane prepolymer having terminal isocyanate groups. 3,585,161, Cl. 260-33.8

Akamatsu, Takashi: *See—*
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Albertson, Noel F.; and Wetterau, William F., to Sterling Drug Inc. N-benzyl-2-(benzyl and p-alkoxybenzyl)-3,4- dialkyl-1,2,5,6-tetrahydropyridines. 3,585,203, Cl. 260-290.

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Albrile, Walter, to Olivetti, Ing., C. & C., S.p.A. Carbon ribbon vibrating device for a type bar typewriter. 3,584,722, Cl. 197-158.

Alcon Metal Products, Inc.: *See—*
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Alexeff, Alexander V., to Alexeff-Snyder Enterprises, Inc. Material treating apparatus. 3,584,392, Cl. 34-56.

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Algemene Kunstzijde Unie, N.V.: *See—*
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Allinger, Hubert B.; and Morse, Theodore H., to Eastman Kodak Company. Electrostatic process for reproducing an image formed by discontinuous raised areas. 3,585,061, Cl. 117-17.5

Allis-Chalmers Manufacturing Company: *See—*
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Anderson, Hilding A., to SCM Corporation. Ink-ribbon feeding and reversing assembly. 3,584,723, Cl. 197-165.

Anderson, Merlin F.; and Perkins, Lee E., to Halliburton Company. Retrievable packer apparatus for use in a well bore and method of prolonging its operating life. 3,584,684, Cl. 166-129.

Anderson-Jacobson Inc.: *See—*
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Andreopoulos, George C.: *See—*
Manley, Charles G.; Hopkins, John R.; Andreopoulos, George C.; Braeking, Richard A.; and Lomaglio, Francis Leo,3,584,586.

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Andrews, John R., Jr., to Honeywell Inc. Two impedance branch termination network for interconnecting two systems for bidirectional transmission. 3,585,399, Cl. 307-208.

Aoki, Katashi. Injection blow molding device. 3,584,337, Cl. 18-5.

Aoki, Takahiko: *See—*
Okaoa, Hidekazu; Aoki, Takahiko; and Narita, Ryozi,3,585,501.

Apicella, Anthony. Method, apparatus and die adapted to simultaneously heat stamp, emboss and cut. 3,584,572, Cl. 101-24.

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Arcamone, Federico; Dorigotti, Luciano; Glaesser, Alfredo; and Redaelli, Silvio, to Societa' Farmaceutici Italia. 10-Alkoxy 9,10-dihydro ergoline derivatives. 3,585,201, Cl. 260-268.

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Astatic Corporation, The: *See—*
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Atakkaan, Namik O.: *See—*
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Crowder, Norman Allison, to Columbia Broadcasting System, Inc. Scanning of cinematograph film. 3,585,293, Cl. 178-7.2

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Davis, John R., Jr.; and Kiggins, Terence R., to Westinghouse Electric Corporation. Resonant gate transistor with improved gain having a vibratory member disposed in a spaced relationship between a field responsive member and a field plate. 3,585,466, Cl. 317-235.

Davis, Raymond G.; and Fonda, Jacob H. Electric wire connector with insulation piercing means. 3,585,571, Cl. 339-97.

Davis, Robert D.; and Stellman, Norman F., to Spectral Dynamics Corporation. Logarithm frequency converter. 3,585,509, Cl. 328-145.

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Davis, Walter B., deceased; and Davis, Ruth B.; executrix. Process for electrowinning salenium. 3,585,115, Cl. 204-128.

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de Ciutiis, Vincent L. Flexible intravenous catheter provided with cutting tip means. 3,584,624, Cl. 128-214.4

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De Montebello, Roger Lannes. Process of making reinforced lenticular sheet. 3,584,369, Cl. 29-458.

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Herr, Ross R.: *See—*
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Hodges, David A.; and Lepselter, Martin P., to Bell Telephone Laboratories, Incorporated. Schottky barrier diodes as impedance elements. 3,585,412, Cl. 307-303.

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Petersen, Alex; and Christensen, Helge Kajholm, to Danfoss A/S. Hydraulic system having bypass valve effective to keep motor speed or pump output constant. 3,584,540, Cl. 91-468.

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Pettis, Charles R., Jr., to Hi-Speed Checkweigher Co., Inc. Photovoltaic cell powered magnetic coil for operation of fluidic circuit flapper. 3,584,636, Cl. 137-81.5

Peytavin, Pierre, to Societe Anonyme dite: Vallourec (Usines A Tubes de Lorraine-Escaut et Vallourec Reunies). Rolling mill. 3,584,489, Cl. 72-208.

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Rudd, Wallace C., to AMF Incorporated. Forge welding by hi-frequency heating and metal deposition. 3,585,337, Cl. 219-67.

Ruegg, Carl W. Control system for mobile work platforms. 3,584,705, Cl. 182-13.

Ruegg, Ernst, to Wyss, Escher, Limited. Pusher centrifuge with two or more drums. 3,585,132, Cl. 210-376.

Ruge, Herbert C.: *See—*
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Ruggles, Kay L., to American Standard Inc. Method of making molded multi-ply flexible laminates. 3,585,094, Cl. 156-245.

Ruggles, Norman A.; and Kaplan, Irving I., to Westinghouse Electric Corporation. Contiguous filter bank using shared resonators. 3,585,532, Cl. 333-7.

Ruske, Manfred: *See—*
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Rust, Charles M.: *See—*
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Rutchik, Walter L., to Cutler-Hammer, Inc. Trigger switch speed control unit with electrical feedback. 3,585,476, Cl. 318-331.

Rutherford, Dwayne C. Farrowing layout. 3,584,603, Cl. 119-16.

Ryan, Frederick J., to United-Carr Incorporated, mesne. Indicator light terminal. 3,585,636, Cl. 340-381.

Ryer, Jack; Deen, Harold E.; Gillespie, Bruce G.; and Kuhn, Robert R., to Esso Research and Engineering Company. Hydrocarbon oils containing 1-aza bicyclo alkane additives. 3,585,139, Cl. 252-50.

Ryswick, Edward L., to Tri-County Realty Corporation, mesne. Torque-responsive expandible core plug. 3,584,714, Cl. 192-54.

Ryswick, Edward L., to Varispace Industries, Inc. Multi-piece gripper for a vise. 3,584,863, Cl. 269-265.

Ryu, Dewey D. Y.; Lee, Bong K.; and Thoma, Richard W., to Squibb, E. R., & Sons, Inc. Process for preparing 1-dehydro steroids. 3,585,110, Cl. 195-51.

Saadeh, Fuad T.; and Pogonowski, Ivo C., to Texaco Inc. Inflatable marine fender. 3,584,464, Cl. 61-48.

Sackis, John J., to Nalco Chemical Company. Quaternary ammonium demulsifiers. 3,585,148, Cl. 252-344.

Saginaw Products Corporation: *See—*
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Sakai, Kiyoshi: *See—*
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Salem, Eli, to Ecodyne Corporation, mesne. Method for treating water by ion exchange. 3,585,127, Cl. 210-32.

Salkeld, Paul A. Tool mounting apparatus. 3,584,816, Cl. 248-16.

Saltini, Fabrizio, to Olivetti, Ing. C., & C., S.p.A. Stored program electronic computer. 3,585,600, Cl. 340-172.5

Samejima, Hirotoshi; Teranishi, Hiroshi; and Deguchi, Takashi, to Kyowa Hakko Kogyo Co., Ltd. Process for extracting proteins from microorganisms. 3,585,179, Cl. 260-112.

Sammann, Ernest F.; and Jackson, Walter W. Stalk pickup apparatus and harvesters. 3,584,444, Cl. 56-119.

Sandoz-Wander, Inc.: *See—*
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Sanford, Robert F., to RCA Corporation. Coding arrangements for multiplexed messages. 3,585,290, Cl. 178-5.6

Sano, Kazuya; and Ohkubo, Kinji, to Fuji Photo Film Company, Ltd. Photographic silver halide light-sensitive element. 3,585,036, Cl. 96-76.

Santerre, Fernand; and Libaud, Francis, to La Telemecanique Electrique. Snap switch with positive-drive breaking action. 3,585,326, Cl. 200-67.

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Sargent, Lowrie B., Jr., to Aluminum Company of America. Titanium fabrication. 3,584,368, Cl. 29-424.

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Natta, Giulio; Mazzanti, Giorgio; Valvassori, Albert; Sartori, Guido; and Cameli, Nazareno,3,585,174.

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Savas, John: *See—*
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Sayles, David C., to United States of America, Army. Inhibiting surface oxidation of solid propellants by adding ketoximes. 3,585,090, Cl. 149-19.

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Schanaman, Reuben: *See—*
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Schatter, Eckart; and Spichall, Walter O., to Siemens Aktiengesellschaft. Integrated circuit arrangement for demodulating an amplitude modulated high frequency signal. 3,585,511, Cl. 329-101.

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Schiefer, Paul J.; and McFarland, James D., Jr., to Schiefer Manufacturing Company, mesne. Wear surfaces of clutches, flywheels and the like. 3,584,718, Cl. 192-70.14

Schill, Hermann, to Prontor-Werk Alfred Gauthier, G.m.b.H. Camera shutter with an electronic timing device. 3,584,560, Cl. 95-53.

Schiltknecht, Adolf; and Graf, Max, to Rieter Machine Works, Ltd. Evacuation means for an open end spinning device. 3,584,452, Cl. 57-58.89

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Schlesier, Herbert, to Petrick, Friedrich, GmbH. Multistage potentiometer. 3,585,560, Cl. 338-131.

Schmidt, Irving; and Taylor, Jay F., to Multi-Metal Wire Cloth, Inc. Framed filter screen and method of producing same. 3,585,134, Cl. 210-495.

Schmidt, Karl-Julius; Fest, Christa; and Hammann, Ingeborg, to Farbenfabriken Bayer Aktiengesellschaft. Thionophosphonic acid esters of substituted 2- hydroxy-3-cyano-6-pyridines. 3,585,205, Cl. 260-294.8

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Schneider, Victor J.; and Popat, Prajivan V., to Texas Instruments, Incorporated. Method for making a battery electrode. 3,585,119, Cl. 204-181.

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Schuller, Werner Hugo Wilhlem: *See—*
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Schundehutte, Karl-Heinz: *See—*
Jager, Horst; Schundehutte, Karl-Heinz; and Machatzke, Heinz,3,585,181.

Schuster, Donald H. Paramagnetic oxygen pump. 3,584,976, Cl. 417-50.

Schuttloffel, Erich; Zanzinger, Heinz; and Schickle, Gerhard, to Telefunken Patentverwertungsgesellschaft m.b.H. Flexible waveguide having means to reduce deformation of internal cross section. 3,585,540, Cl. 333-95.

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Schwartz, Frederick A., to Insta Sales Corporation. Heater assembly for use as incubator, culture tester and the like purposes. 3,584,605, Cl. 119-37.

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Seidel, Michael C.; and Viste, Kenneth L., to Rohm and Haas Company. 1,2-Dihydro-1,3,5-triazine derivatives. 3,585,197, Cl. 260-249.5

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Selden, Sydney C.: *See—*
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Seligmann, Heinrich, to Siemens Aktiengesellschaft. Measuring device for monitoring stresses of a tool. 3,584,505, Cl. 73-133.

Senf, George A., to Sprague Electric Company. Microstrip delay line. 3,585,534, Cl. 333-29.

Senf, George A., to Sprague Electric Company. Microstrip delay line. 3,585,535, Cl. 333-29.

Senf, George A.: *See—*
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Sennewald, Kurt; Gehrmann, Klaus; and Viertel, Gunter, to Knapsack Aktiengesellschaft. Process for the manufacture of a mixture consisting substantially of 1,2-dichlorobutene- (2), 1,3-dichlorobutene-(2) and 2,3-dichlorobutene -(1). 3,585,247, Cl. 260-654.

Senour, Donald A., to BLH Electronics, Inc. Aircraft weight and center of gravity determination system which includes alarm, self-checking, and fault override circuitry. 3,584,503, Cl. 73-65.

Sensi, John E.: *See—*
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Sepall, Ola; Stanners, Leonard N.; and Tremblay, Bruno. Apparatus for automatically producing test sheets from papermaking pulps. 3,585,106, Cl. 162-252.

Seregni, Renato. Tape recorder controls. 3,584,878, Cl. 274-4.

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Sevenich, Robert J., to Minnesota Mining and Manufacturing Company. Electrically superior polyester film containing polystyrene or polyionomer additive polymer. 3,585,255, Cl. 260-873.

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Shacknow, George A., to Bendix Corporation, The. Motor speed control device including fail safe monitor. 3,585,477, Cl. 318-341.

Shaifer, Theodore R., to IIT Research Institute. Video playback amplifier with frequency compensation. 3,585,315, Cl. 179-100.2

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Shearer, Wendell B., to Package Machinery Company. Heat sealed thermoformed container and method of making same. 3,584,430, Cl. 53-30.

Shearhod, George E., to Vision Wrap Industries, Inc. System for producing grommet bags. 3,585,095, Cl. 156-513.

Sheets, Paul A. Flexible sealing ring. 3,584,889, Cl. 277-208.

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Luijk, Pieter; Moller, Pieter H. M.; and Rellage, Jacobus M., 3,585,158.
Vogel, Charles B., 3,585,580.

Shen, Chung Yu; and Stahlheber, Norman Earl, to Monsanto Company. Detergent sequestration compositions containing STP and NTA. 3,585,146, Cl. 252-137.

Sheppard, Chester Stephen; and Mac Leay, Ronald Edward, to Pennwalt Corporation. 4,4'-Alkylene bis (semicarbazide) and derivatives thereof. 3,585,200, Cl. 260-268.

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Shiba, Kamekichi. Flow meter. 3,584,508, Cl. 73-194.

Shibagaki, Masao, to Toyo Kogyo Co., Ltd. Ignition system for rotary piston internal combustion engine. 3,584,608, Cl. 123-8.45

Shibuya, Tetsuzo. Expansible linkage. 3,584,456, Cl. 59-79.

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Shoemaker, James C., to Symons Corporation. Self-contained waler clamp assembly for concrete wall form. 3,584,829, Cl. 249-219.

Sholtes, Carl E., to Westinghouse Electric Corporation. Bottled-water cooler. 3,584,472, Cl. 62-394.

Shore, Samuel: *See—*
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Shubart, Harry S. Button protector. 3,584,349, Cl. 24-113.

Sibley, Forbes S.; and Spooner, Norman F., to Hoskins Manufacturing Company. Nickel-silicon thermocouple element. 3,585,083, Cl. 136-236.

Sieber, Horst. Holder for paper rolls. 3,584,802, Cl. 242-55.3

Siedband, Melvin P.; and Duffy, Philip A., Jr., to Westinghouse Electric Corporation. Brightness stabilizer with improved image quality. 3,585,391, Cl. 250-95.

Siefert, Roland; and Odenbach, Heinz, to Kienzle Uhrenfabriken GmbH. Clock oscillator regulator. 3,584,454, Cl. 58-28.

Siegel, Arthur D. Gas pump. 3,584,982, Cl. 417-464.

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Keller, Wolfgang; and Kramer, Herbert, 3,585,008.
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Siller, Bruno, to Varta Pertrix-Union Gesellschaft mbH. Vented galvanic element and dry cell. 3,585,082, Cl. 136-178.

Sills, Arthur R., to United States of America, Army. Sampling device. 3,584,920, Cl. 307-257.

Silvast, William T., to Bell Telephone Laboratories, Incorporated. Ion lasers employing gas mixtures. 3,585,524, Cl. 331-94.5

Silverman, Jack J. Sandal for foot cast. 3,584,402, Cl. 36-11.5

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Simmler, Walter: *See—*
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Simmons, George. Golf scoring device. 3,584,597, Cl. 116-120.

Simon Engineering Dudley Limited: *See—*
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Simon, Ralph E.; and Rodgers, Robert L., to RCA Corporation. Gallium arsenide phosphide camera tube target having a semi-insulating layer on the scanned surface. 3,585,430, Cl. 313-65.

Simons, Dolph, to Simco Company, Inc., The. Shockless type static eliminator with semiconductive coupling. 3,585,448, Cl. 317-2.

Simpson, Fred E.; Kirchgessner, Edwin M.; and Kupfert, Bernard F., to Caterpillar Tractor Company. Seal for high speed application. 3,584,886, Cl. 277-92.

Singer Company, The: *See—*
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Singer, Hans S.; and Chlystun, Walter K., to Mahasi Corporation. Cooking ensemble and cover therefor. 3,585,050, Cl. 99-357.

Singer-General Precision, Inc.: *See—*
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Sion, Vern F. Wrist watch crystal protector. 3,584,455, Cl. 58-105.

Siracusa, Gianni,. Garbage disposal system. 3,584,587, Cl. 110-8.

Siron, Robert E., to United States of America, Army. Vacuum-operated specimen holding device. 3,584,859, Cl. 269-21.

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Skirvin, Clifford D. Power supply. 3,585,483, Cl. 321-4.

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Skoli, Sigmund P.; Witt, Chester J.; and Mojonnier, Harry G., to Mojonnier Bros. Co. Deaerator apparatus. 3,584,438, Cl. 55-193.

Slavin, Martin J.; Cohen, Kenneth; and Pullman, Morton, to Instrument Systems Corporation. Closed loop control system having series connected coders. 3,585,595, Cl. 340-163.

Sliwinski, John. Lawn mower hook for grass catcher. 3,584,351, Cl. 24-239.

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Castaing, Raymond; and Slodzian, Georges,3,585,384.

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Smatko, Joseph S., to General Motors Corporation. Fuel system flow process. 3,584,506, Cl. 73-194.

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Smith, Byron D.; and Hermann, Robert, to Syner-Data, Inc. Hammer module for high-speed line printer. 3,584,574, Cl. 101-93.

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Smith, Harold E., 1/2 to Earl, Thad J. Refuse vehicle with compacting and unloading means. 3,584,755, Cl. 214-83.3

Smith, Leonard L.; Houston, Robert O.; Longacre, David Sidney; Thompson, Richard; and Kempfer, Donald B. Fire inhibiting composition comprising a chemical fire retardant, a magnesium oxide, a clay and an adhesive. 3,585,135, Cl. 252-8.1

Smith, Telford L. Low bolt clamp with stabilizing fingers. 3,584,353, Cl. 24-279.

Smith, Tom F., to Autoscope, Inc. Take-up mechanism. 3,584,807, Cl. 242-201.

Smith, Warren L.: *See—*
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Societa' Italina Resine S.p.A.:*See—*
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Societe Anonyme Poclain: *See—*
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Societe des Lanetiers: *See—*
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Societe d'Etudes de Recherches et d'Applications Scientifiques et Midicales E.R.A.S.M.E.:*See—*
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Societe en nom collectif 'Science Union et Cie:*See—*
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Societe Europeenne de Propulsion: *See—*
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Societe Generale de Constructions Electiques et Mecaniques (Alsthom): *See—*
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Societe Generale des Produits Refractaires: *See—*
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Societe Lignes Telegraphiques et Telephoniques: *See—*
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Societe Suisse pour L'Industrie Horlogere S.A.:*See—*
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Soignet, Donald M.; Benerito, Ruth R.; and Pilkington, Mary W., to United States of America, Agriculture. Diethylaminoethylated cellulose-acide anhydride reaction products. 3,585,190, Cl. 260-326.

Solomon, Leonard: *See—*
England, David C.; and Solomon, Leonard,3,585,235.

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Wight, George W., Jr.: *See—*
Stoner, Eugene M.; and Wight, George W., Jr.,3,584,532.
Willach, Horst: *See—*
Hallmann, Hermann; and Willach, Horst,3,584,484.
Willardson, Fred W.: *See—*
Hannah, Jack W.; and Willardson, Fred W.,3,584,396.
Williams, Charles R., to Monsanto Company. Method for sizing textiles. 3,585,070, Cl. 117-139.5
Williams, Chester I. Deck form support. 3,584,825, Cl. 249-23.
Williams, Colin P. Inflatable furnature. 3,584,914, Cl. 297-456.
Williams, Elsa S. Holder for needlepoint canvas work. 3,584,803, Cl. 242-68.
Williams, Everard M., Dr.: *See—*
Hockenberry, Terry O., 3,585,339.
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Williams, John Covington, to American Machine & Foundry Company. Acretion apparatus. 3,585,107, Cl. 162-387.
Williams, Kenneth C., to Ethyl Corporation. Spirocyclic lead compounds. 3,585,226, Cl. 260-437.
Williams, Robert E.: *See—*
Ditter, Jerome F.; Klusmann, Eugene B.; and Williams, Robert E.,3,585,241.
Williams, Sidney B.: *See—*
Dornfeld, John E.; Williams, Sidney B.; and Mantey, George A.,3,585,472.
Willinger, Allan H., to Mattel-Aquarium, Inc., mesne. Plastic tubing combination. 3,584,901, Cl. 285-177.
Willms, Charles F., to Norris Industries, Inc. Dry type sprinkler. 3,584,689, Cl. 169-17.
Willoughby, Joseph A.: *See—*
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Wills, John H., to Philadelphia Quartz Company. Sodium silicate. 3,585,066, Cl. 117-100.
Wilson, Alton H.; and Ripley, Douglas E., Sr. Drop through cutting head and gathering device. 3,584,447, Cl. 56-340.
Wilson, Donald J.: *See—*
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Wilson, Kenneth J. Locking vise with true and square jaws. 3,584,862, Cl. 269-242.
Wilson, Robert M., to Dare Products, Incorporated. Float controlled valve assembly. 3,584,642, Cl. 137-270.
Wilson, William G., to Babcock & Wilcox Company, The. Continuous casting apparatus. 3,584,679, Cl. 164-283.
Winkler & Dunnebier Maschinenfabrik und Eisengiesserei KG: *See—*
Ehlscheid, Gunter, 3,584,545.
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Wisner, Daniel A., to RCA Corporation. Optical flaw detector. 3,584,963, Cl. 356-237.
Wisner, Kenneth R. Photographic film holder. 3,584,562, Cl. 95-71.
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Woessner, Robert J.: *See—*
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Wofford, Delbert R. Apparatus and methods for connecting and disconnecting electrical circuits underwater. 3,585,567, Cl. 339-45.
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Cunningham, Robert H.; and Wolfarth, Eugene F.,3,584,391.
Wolfrom, Melville L.; and Wang, Paul Y., to Ohio State University, The. 2-Amino-2-deoxy-D-glucopyrano-D-glucopyranans having the alpha-D-glucose configuration, method, and use. 3,585,184, Cl. 260-209.
Woodall, Jerry M.: *See—*
Blum, Samuel E.; Foster, Luther M.; Shih, Kwang K.; and Woodall, Jerry M.,3,585,087.
Woodcock, Albert E., to United States of America, Navy. Ship piloting trainer. 3,584,397, Cl. 35-10.2
Woodworth, Rodney L., to Wayne Manufacturing Company. Road sweeper broom suspension. 3,584,326, Cl. 15-84.
Woodworth, Rodney L.: *See—*
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Miram, George V.; and Woolsey, Samuel W.,3,585,445.
Worley, Lauren D., to Coleman Company, Inc., The. Multi-use sleeping bag construction. 3,584,323, Cl. 5-343.
Worster, Arthur R., to Ingersoll-Rand Company. Gas compressor. 3,584,981, Cl. 417-542.
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Woycheshin, Elias A.; and Scott, Donald L., to Kaiser Aluminum & Chemical Corporation. Stable liquid polyisocyanate compositions. 3,585,230, Cl. 260-453.
Wrampe, Peter: *See—*
Kiyonaga, Kazuo; and Wrampe, Peter,3,584,848.

Wren, Henry K.; and Hobson, William T., to United States of America, Navy. Tin plating bath having organic compound. 3,585,114, Cl. 204-54.

Wright, Donald Curtis: *See—*
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Wright, Harry Dudley: *See—*
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Wright, Robert W.: *See—*
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Wrightson, Robert William, to Hills Industries Limited. Extensible clothes line. 3,584,745, Cl. 211-119.15

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Wyandotte Chemicals Corporation: *See—*
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Wyatt, Gerald A.: *See—*
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Wyle Laboratories: *See—*
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Wynne, Hubert Cecil; and Jones, David, to Pilkington Brothers Limited. Mountings for interchangeable casting rolls of a glass sheet forming apparatus. 3,584,476, Cl. 65-172.

Wyss, Escher, Limited: *See—*
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Yaccino, Michael Joseph: *See—*
Hudson, William Jeffrey, Jr.; Yaccino, Michael Joseph; Dowling, Edward Camp; and Dormer, Keith Henry,3,585,598.

Yacobucci, Joseph R. Support and guide means for saws. 3,584,663, Cl. 143-6.

Yamada, Eiji; and Akamatsu, Takashi, to Sumitomo Chemical Company, Ltd. Novel anthraquinone disperse dyes. 3,585,220, Cl. 260-376.

Yamada, Kingo. Adapters for electrical wall receptacles. 3,585,555, Cl. 337-187.

Yamada, Koichi; Minoda, Yasuji; Kodama, Tohru; and Koters, Uichiro, to United States of America, Agriculture. Process of producing L (±)-tartaric acid. 3,585,109, Cl. 195-47.

Yamada, Nobutoshi: *See—*
Nishiyama, Chyuzou; and Yamada, Nobutoshi,3,585,172.

Yamada, Toshiyuki, to Sony Corporation. Method of making a magneto-resistance element. 3,584,377, Cl. 29-583.

Yamakawa, Kiyoshi, to Sony Corporation. Magnetic recording and reproducing system with tape-to-head speed control. 3,585,291, Cl. 178-6.6

Yamamoto, Bunitu; and Murakami, Yoshikei. Lighting fixture. 3,585,379, Cl. 240-73.

Yamamoto, Kenichi, to Toyo Kogyo Co., Ltd. Combustion chamber for a rotary piston type internal combustion engine. 3,584,607, Cl. 123-8.45

Yamashita, Michiko: *See—*
Fujimaki, Masao; Kato, Hiromichi; Arai, Soichi; and Yamashita, Michiko,3,585,047.

Yanai, Hisayoshi; Migitaka, Masatoshi; Kodera, Hiroshi; Ikoma, Toshiaki; and Sugeta, Takayuki, to Hitachi, Ltd. Device for generating pulsed light by stimulated emission in a semiconductor triggered by the formation and transit of a high field domain. 3,585,520, Cl. 331-94.5

Yanaka, Takashi; and Shirota, Kohei, to Nihon Denshi Kabushiki Kaisha. Objective lens pole pieces. 3,585,546, Cl. 335-210.

Yoshida, Ryonosuke: *See—*
Akamatsu, Akira; Togo, Kazushi; Takagi, Yasuo; and Yoshida, Ryonosuke,3,585,161.

Yoshida, Yukio: *See—*
Mihara, Kazuyuki; Kobiyama, Kunio; and Yoshida, Yukio,3,585,159.

Yoshimura, Koichi, to Matsushita Electric Industrial Co., Ltd. Electromagnetic induction responsive device. 3,585,458, Cl. 317-156.

Yoshioka, Hirosuke; Itaya, Nobushige; and Matsumoto, Yutaka, to Sumitomo Chemical Company, Ltd. Process for producing 4-phenyl-3-oxo-butane-1 carboxylic acid esters. 3,585,234, Cl. 260-476.

Yoshioka, Hirosuke: *See—*
Hirai, Hajime; and Yoshioka, Hirosuke,3,585,212.

Young, Athel R.; and Trelc, William F., to McGraw-Edison Company. Portable electric cooking appliance. 3,585,360, Cl. 219-405.

Young, Robert E., to Dresser Industries, Inc., mesne. D-A or A-D converter. 3,585,633, Cl. 340-347.

Youngquist, Mary J.; and Gates, John W., Jr., to Eastman Kodak Company. Mono-epoxy quinone hardeners for gelatin. 3,585,040, Cl. 96-111.

Zaander, Carl J., to Fuller Company. Material level sensing device and indicating system. 3,585,457, Cl. 317-123.

Zahurance, Emery J.: *See—*
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Lennon, Fred A.; and Zahurance, Emery J.,3,584,900.

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Majkowski, Julian Franciszek; and Przybylski, Zdzislaw Ryszard, 3,584,984.

Zandstra, Bertus H.: *See—*
Van Assendelet, Leendert; and Zandstra, Bertus H.,3,584,656.

Zanzinger, Heinz: *See—*
Schuttloffel, Erich; Zanzinger, Heinz; and Schickle, Gerhard,3,585,540.

Zearfoss, Elmer W., Jr., to Philco-Ford Corporation. Centrifugal ice maker. 3,584,470, Cl. 62-353.

Zelina, William B., to General Systems, Inc. Battery charging system with voltage reference means with two reference levels. 3,585,482, Cl. 320-39.

Zelina, William B., to General Systems, Inc. Voltage regulator arrangement for generators having auxiliary excitation means. 3,585,490, Cl. 322-28.

Zelinka, Robert, to Siemens Aktiengesellschaft. Astable multivibrator having a sweep frequency stabilized by a crystal oscillator. 3,585,526, Cl. 331-113.

Zenith Radio Corporation: *See—*
Jirka, Howard F., 3,585,287.
Korpel, Adrainus, 3,585,392.
Rennick, John L., 3,585,285.

Zerlauth, Ferdinand, to Sulzer Brothers Limited. Mounting for adjustably holding a guide vane carrier in a multistage gas turbine. 3,584,967, Cl. 415-137.

Zerrenner, Lothar: *See—*
Krone, Heinz; Hoffmann, Wilhelm; Autenrieth, Rolf; Rott, Joachim; and Zerrenner, Lothar,3,585,572.

Zhukov, Vladimir Dmitrievich: *See—*
Metreveli, Lev Illarionovich; Zhukov, Vladimir Dmitrievich; and Chimishkian, Kornely Leonovich,3,584,798.

Zickel, Thomas A.; and Templin, Jackson R., to General Motors Corporation. Motor speed control dependent on speed feedback and a vacuum. 3,585,479, Cl. 318-346.

Ziegler, Gerhard: *See—*
Gutt, Hans-Joachim; and Ziegler, Gerhard,3,585,488.

Zneimer, Joel E.: *See—*
Baba, Paul D.; and Zneimer, Joel E.,3,585,261.

Zschocke, Albrecht; and Fischer, Adolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. N-(L-Hydroxy-β,β,β-trichloroethyl)-2,6-dichlorothiobenzamide. 3,585,236, Cl. 260-551.

Zuchowski, Richard C.: *See—*
Lahrson, Allan E.; and Zuchowski, Richard C.,3,585,601.

Zurcher, Erwin: *See—*
Corbaz, Andre; Engel, Jean-Pierre; and Zurcher, Erwin,3,585,612.

Zvanut, Albert J., to Stoody Company. Arc welding process and electrode for stainless steel. 3,585,352, Cl. 214-137.

Zwingenberger, Arno, to Liebrandt, Karl. Coupling for the bearing shafts of sectional warp beams of warp knitting and Raschell machines. 3,584,479, Cl. 66-86.

Zwingenberger, Arno; and Hagel, Adolf, to Liebrandt, Karl. Knitting tool mounting. 3,584,480, Cl. 66-114.

LIST OF DESIGN PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 15TH DAY OF JUNE, 1971

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

American Hospital Supply Corp.: *See*—
Bost, Lewis F. 220,928.

Arlett, John, to Wilkinson Sword Ltd. Knife. 220,930, 6–15–71. Cl. D95—3.

Bardel, Inc.: *See*—
Mowrer, Wesley A. 220,927.

Beaudoin, Dale J.: *See*—
Przwodek, Donald, Thorwaldsen, and Beaudoin. 220,929.

Bliss & Laughlin Industries, Inc.: *See*—
Speicher, Alan W., and Forman. 220,901.

Blomgren, Jack P., to Minnesota Mining and Mfg. Co. Copy-machine. 220,923, 6–15–71, Cl. D61—1.

Boomer, Harry, to Gemini Marine, Inc. Boat deck. 220,925, 6–15–71, Cl. D71—1.

Borichevsky, Donald J., to The Telescope Folding Furniture Co. Chair or similar article. 220,906, 6–15–71, Cl. D15—1.

Bost, Lewis F., to American Hospital Supply Corp. Medical basin. 220,928, 6–15–71, Cl. D83—1.

Carol Co.: *See*—
Howerter, Thomas F. 220,917.

Chesley, Ronald F.: *See*—
Klamer, Reuben B., Conroy, and Chesley. 220,918.

Cochran, Burton L., to The Warner & Swasey Co. Double ended cutting insert. 220,920, 6–15–71, Cl. D54—6.

Cochran, Burton L., to The Warner & Swasey Co. Singled ended cutting insert. 220,921, 6–15–71, Cl. D54—6.

Cochran, Burton L., to The Warner & Swasey Co. Double ended cutting insert with positive rake. 220,922, 6–15–71, Cl. D54—6.

Conroy, Richard F.: *See*—
Klamer, Reuben B., Conroy, and Chesley. 220,918.

Ernest, Robert O., to Sunbeam Corp. Electric can opener. 220,899, 6–15–71, Cl. D8—36.

Esquire, Inc.: *See*—
McNamara, Albert C., Jr. 220,916.

Forman, Michael G.: *See*—
Speicher, Alan W. and Forman. 220,901.

Fouad Said Productions, Inc.: *See*—
Said, Fouad. 220,905.

Fresard, Marcel, to Melina, S.A. Sewing machine. 220,924, 6–15–71. Cl. D70—1.

Gemini Marine, Inc.: *See*—
Boomer, Harry. 220,925.

General Electric Co.: *See*—
Judson, William V. 220,913.
Judson, William V. 220,914.

Hill, Frederick M., to Ranco Inc. Wall thermostat. 220,919, 6–15–71, Cl. D52—7.

Howerter, Thomas F., to Carol Co. Razor-blade scraper. 220,917, 6–15–71, Cl. D49—26.

Jacobs, Marjorie L.: *See*—
Jacobs, Stanley A., and Jacobs. 220,904.

Jacobs, Stanley A., and M. L. Jacobs, to The Thin Mann, Inc. Store front. 220,904, 6–15–71. Cl. D13—1.

Jedora, John. Electric spotting brush for dry cleaners. 220,898, 6–15–71, Cl. D4—14.

Jennings, George H. Combination fishing rod support and bite alarm. 220,909, 6–15–71, Cl. D22—22.

Judson, William V., to General Electric Co. Clock or similar article. 220,913, 6–15–71, Cl. D42—7.

Judson, William V., to General Electric Co. Clock or similar article. 220,914, 6–15–71, Cl. D42—7.

Kerwit, Malcolm, to Kerwit Medical Products, Inc. Combined chair and attachment tray for use in surgical treatment. 220,907, 6–15–71, Cl. D15—3.

Kerwit Medical Products, Inc.: *See*—
Kerwit, Malcolm. 220,907.

Klamer, Reuben B., R. F. Conroy, and R. F. Chesley, said Conroy and said Chesley assignor to said Klamer. Divining rod. 220,918, 6–15–71, Cl. D52—1.

Maidenform, Inc.: *See*—
Pioli, Raymond. 220,897.

McGrady, Corinne. Transparent book stand. 220,911, 6–15–71, Cl. D33—3.

McKinney, James C.: *See*—
Rosefeld, Jack H. 220,902.

McNamara, Albert C., Jr., to Esquire, Inc. Wall-mounted light fixture. 220,916, 6–15–71. Cl. D48—4.

Melina, S. A.: *See*—
Fresard, Marcel. 220,924.

Minnesota Mining and Mfg. Co. *See*—
Blomgren, Jack P. 220,923.

Mowrer, Wesley A., to Bardel, Inc. Cradle for positioning patient for radiological diagnosis or therapy. 220,927, 6–15–71, Cl. D83—1.

Peroni, George J., to Seatech Corp. Underwater towing vehicle. 220,926, 6–15–71. Cl. D71—1.

Pioli, Raymond, to Maidenform, Inc. Brassiere, 220,897, 6–15–71, Cl. D2—24.

Poirier, Lee. Portable charger for hearing aid batteries. 220,910, 6–15–71, Cl. D26—15.

Przwodek, Donald, S. E. Thorwaldsen, and D. J. Beaudoin, to Uniroyal, Inc. Pneumatic tire. 220,929, 6–15–71. Cl. D90—20.

Ranco Inc.: *See*—
Hill, Frederick M. 220,919.

Rosefeld, Jack H., and J. C. McKinney, to Texize Chemicals, Inc. Bottle or similar article. 220,902, 6–15–71, Cl. D9—42.

Said, Fouad, to Fouad Said Productions, Inc. Photographic bus. 220,905, 6–15–71, Cl. D14—3.

Schelosky, Edward M. Dough kneader. 220,915, 6–15–71, Cl. D44—1.

Seatech Corp.: *See*—
Peroni, George J. 220,926.

Sessa, Raymond V. Ice hockey roller skate. 220,912, 6–15–71, Cl. D34—14.

Smith, Alexander R., to Unique Mail Order Co. Folding chair. 220,908, 6–15–71, Cl. D15—11.

Speichcer, Alan W., and M. G. Forman, to Bliss & Laughlin Industries, Inc. Combined caster and mounting. 220,901, 6–15–71, Cl. D8—226.

Sproul, Fred C., Sr. Housing tract. 220,903, 6–15–71, Cl. D13—1.

Sunbeam Corp.: *See*—
Ernest, Robert O. 220,899.

Telescope Folding Furniture Co., The: *See*—
Borichevsky, Donald J. 220,906.

Texize Chemicals, Inc.: *See*—
Rosefeld, Jack H., and McKinney. 220,902.

Thin Mann, Inc., The: *See*—
Jacobs. Stanley A., and Jacobs. 220,904.

Thomas, Frank P. Advertising sign. 220,931, 6–15–71. Cl. D96—12.

Thorwaldsen, Stanley E.: *See*—
Przwodek, Donald, Thorwaldsen, and Beaudoin. 220,929.

Unique Mail Order Co.: *See*—
Smith, Alexander R. 220,908.

Uniroyal, Inc.: *See*—
Przwodek, Donald, Thorwaldsen, and Beaudoin. 220,929.

Warner & Swasey Co., The: *See*—
Cochran, Burton L. 220,920.
Cochran, Burton L. 220,921.
Cochran, Burton L. 220,922.

Wilkinson Sword Ltd.: *See*—
Arlett, John. 220,930.

Zlaylek, Theodore, Jr. Fireman's tool. 220,900, 6–15–71. Cl. D8—89.

LIST OF DESIGN PATENTEES

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CLASSIFICATION OF PATENTS

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NOTE.—First number, class; second number, subclass; third number, patent number

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219	3,584,440	
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59	3,584,453	
58— 28	3,584,454	
105	3,584,455	
59— 79	3,584,456	
60— 36	3,584,457	
39.02	3,584,458	
.23	3,584,459	
53	3,584,460	
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61— 1	3,584,462	
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62—183	3,584,466	
62—252	3,584,467	
262	3,584,468	
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380	3,584,471	
394	3,584,472	
64— 2	3,584,473	
9	3,584,474	
65— 3	3,585,015	
22	3,585,014	
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172	3,584,476	
182	3,584,477	
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323	3,585,018	
66— 19	3,584,478	
86	3,584,479	
114	3,584,480	
120	3,584,481	
68— 23	3,584,482	
70— 81	3,584,483	
276	3,584,484	
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71— 28	3,585,019	
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72— 38	3,584,487	
73	3,584,488	
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362	3,584,494	
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73— 23	3,584,499	
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475	3,584,512	
74— 5.34	3,584,513	
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83—208	3,584,528	
457	3,584,529	
84—470	3,584,530	
85— 1	3,584,531	
89— 47	3,584,532	
144	3,584,533	
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92— 24	3,584,544	
93— 49	3,584,548	
61	3,584,545	
94— 18	3,584,546	
94— 46	3,584,547	
95— 1	3,584,549	
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71	3,584,562	
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100—163	3,584,570	
101— 1	3,584,571	
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93	3,584,574	
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92	3,584,582	
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66	3,585,058	
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107— 4	3,584,585	
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110— 8	3,584,587	
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111— 86	3,584,588	
112—252	3,584,589	
114— 66.5	3,584,590	
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115— 1	3,584,592	
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121	3,584,598	
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217	3,585,075	
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124— 11	3,584,614	
30	3,584,615	
125— 11	3,584,616	
127— 63	3,584,617	
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17	3,584,631	
132— 9	3,584,632	
134—104	3,584,633	
113	3,585,076	
136— 86	3,585,077	
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178	3,585,082	
236	3,585,083	
137— 54	3,584,634	
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138—109	3,584,655	
141	3,584,656	
142	3,584,657	
139— 16	3,584,658	
369	3,584,659	
140—105	3,584,660	
141— 61	3,584,661	
98	3,584,662	
143— 6	3,584,663	
41	3,584,664	
144—145	3,584,665	
213	3,584,666	
145— 50	3,584,667	
146—118	3,584,668	
148— 6.2	3,585,084	
148—110	3,585,085	
145	3,585,086	
171	3,585,087	
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152— 52	3,584,669	
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580	3,585,096	
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157— 1.3	3,584,672	
13	3,584,673	
159— 4	3,584,674	
160—371	3,584,675	
161— 63	3,585,098	
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116	3,585,101	
162	3,585,102	
191	3,585,103	
162— 17	3,585,104	
211	3,585,105	
252	3,585,106	
387	3,585,107	
164— 60	3,584,676	
82	3,584,677	
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369	3,584,680	
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185	3,584,683	
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171— 27	3,584,690	
172—239	3,584,691	
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76	3,585,275	
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146	3,585,277	
152	3,585,278	
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45	3,585,567		3,585,591		3,585,617	160	3,584,934	117	3,584,959	464	3,584,982
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198	3,585,574		3,585,598	274	3,585,625		3,584,942	16	3,584,522		3,584,988
217	3,585,576		3,585,599	279	3,585,626	124	3,584,943	37	3,584,523	93	3,584,989
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3	3,585,578		3,585,601		3,585,628	353– 37	3,584,945	137	3,584,967		

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54 : 3,584,322	55 : 3,584,381	3,584,753	3,585,098	3,585,332	3,585,476
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Design Patents

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